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PRINCIPLES OF MUSICAL EDUCATION.

By **JAMES L. MURSELL, Ph.D.**, Department of Education, Lawrence College.

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TO
GLADYS IVES BRAINARD
AS A MARK OF MY
ESTEEM AND REGARD

29046



EDITOR'S FOREWORD

ONE hears it said frequently that as a people we are devoid of musical intelligence and sensitiveness. It is claimed that we do not and probably cannot discriminate between good music and the dance-hall type. There is a wide-spread belief that the young and the old alike in other countries gain more pleasure and benefit from music than we do, and are also more skillful and competent in singing and in performing on musical instruments. Musical teachers among us usually seem to be making a great effort to awaken the interest of their pupils in understanding the meaning of music and in musical execution. Musical leaders at conventions often appear to be worried because their audiences show but little enthusiasm in singing and do not manifest a lively desire to participate in programs put on for the purpose of arousing good fellowship in a gathering.

There is another complaint relating to the musical situation in our country which is very persistent and somewhat disturbing. Taxpayers are saying that funds spent for musical instruction in public schools are largely wasted. The present writer was an auditor recently at an educational meeting in a mid-western city called for the purpose of protesting against the amount of money that was being expended in the city on the maintenance of public education. A majority of the citizens who spoke on this occasion stated that the teaching of music in the schools was costing the taxpayers many thousands of dollars but that little if any good came from it. The children do not enjoy their lessons; they do not sing or perform on musical

instruments outside of school and especially after graduation ; and the musical instruction in the schools has had no effect in curtailing the popularity of jazz music. One citizen declared vehemently, "The more we expend in teaching children music in the schools, the more they go to places where they can hear only uncouth and barbarous music. They will not attend concerts where really good music can be heard. They do not seem to show any interest in or appreciation of music that would do them some good."

Mention may be made of still another complaint. Parents often lament over the fact that they spend a considerable amount of money for the musical training of their children in private studios and colleges but that they cannot see that the children are benefited in proportion to the cost of this education. Apparently, private agencies have not been more successful than the public schools in developing in the young musical intelligence or sensitiveness or skill in producing music. There can be no doubt that musical instruction in our country has been too static for the most part. It may have been successful in cultivating a certain amount of technical skill ; but it has failed to develop in high degree musical intelligence and musical feeling, for which skill should be only a means of expression. To put it in another way, musical instruction in our country has, speaking generally, left our young people musically neutral and inert. What skill they have acquired has lain dormant, because there has not been back of it either understanding of the meaning of music, or feeling for musical values, or desire to produce music for the exhilaration of performance or the promotion of the pleasure of auditors.

It is a commonplace, of course, that the American people seem to be more devoted to the type of music known as jazz than are any other advanced peoples. Musicians, psychologists, and laymen have offered explanations relating to the popularity

of jazz in our country ; but whatever the reason may be, it is evident that musical instruction in our public and private schools has not been very effective in developing musical intelligence and appreciation. It is probably not going beyond proper bounds to say that musical culture is at a low ebb in our country ; and by culture is meant an understanding of the meaning of music and a sensitiveness to the qualities of good music as distinguished from mere jazz.

The author of *Principles of Musical Education* deals with all these problems and shows why more gratifying results are not secured from our musical instruction in public and private schools. No one who will read this book can fail to become convinced that emphasis placed upon the externals, so to speak, of musical training cannot develop musical appreciation or even train young people in musical skills in an effective way. Professor Mursell shows that mere tricks in performance on the piano, violin, or other instrument, or even in the use of the voice cannot be regarded as musical education in a true sense. He makes it clear that we will always be disappointed in the outcomes of our musical training if we do not aim at musicianship in our educational programs ; and musicianship is primarily mental rather than motor. It has to do with understanding and feeling rather than with manual dexterity.

The reader should be told that Professor Mursell is an accomplished musician on several instruments. At the same time he is a psychologist who has given particular attention to the development of educational method based on modern experimental psychology. It would be rare to find any one who is so well equipped as is Professor Mursell to treat the problems of musical education so as to achieve the objectives which teachers of music should keep in view, — the awakening of musical appreciation, the development of musical intelligence and feeling, and the cultivation of technical skills.

In this volume, the problems which every one who is interested in musical education, whether as teacher, as parent, or as student, would encounter are treated in a concrete way in the light of all that has been done experimentally in the study of musical ability and method in musical education, and in view also of the principles of modern psychology that relate to the types of learning, appreciation, and performance involved in musical education. Fortunately, the author is gifted in the use of an unusually clear and attractive style which, in addition to his musical accomplishments and his psychological and educational understanding and experience, has enabled him to produce a book of interest and merit for all who, as learners, teachers, or laymen, are interested in the acquiring or promoting of musical education.

M. V. O'SHEA

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PREFACE

THIS book has been written in the attempt to meet in some measure what has long seemed to me a most remarkable omission in educational literature. A very considerable amount of research material bearing on the teaching of music now exists, but for various reasons it is not accessible to the ordinary music teacher, and still less so to the average student. Yet there is not the least doubt that music teachers and students alike can benefit enormously by a sane and scientific approach to their work. As a matter of fact there are few pedagogical fields where scientific methods can be more precisely applied than in music. And so it is to be hoped that an organized presentation of what is actually known about musical-mindedness and its development may be found of value.

The development of great musical skill can never be an easy undertaking. But it is safe to say that a very great deal of the teaching done in studios and classrooms makes it actually impossible. This is due, not to bad intent, but to lack of knowledge of the aims and methods properly involved in musical training. For this the best corrective must be a wider dissemination among the musical profession of knowledge of the scientifically established facts regarding musical education.

The somewhat general title, *Principles of Musical Education*, has seemed appropriate because, although the chief content of the work is an analysis of the psychological factors underlying musical training, ~~questions of administration have also~~ been discussed and an attempt has been made to present a systematic and rounded account of what musical education ought to be.

My sincere acknowledgments are due to my father for his assistance in preparing this volume for the press.

The extent of my indebtedness to my various music teachers for what appears in these pages can hardly be estimated with precision, but it is very great. Particularly I owe much to Mr. Percy Brier, of Brisbane, Australia, and to Mr. Gordon Short, of Adelaide, Australia.

My especial thanks are due to Professor M. V. O'Shea, of the University of Wisconsin, whose unfailing encouragement and kindly criticism have done very much to make this book what it is.

J. L. M.

PRINCIPLES OF MUSICAL EDUCATION

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CHAPTER I

INTRODUCTION

THE AIM OF THE PRESENT WORK

In the following pages we shall try to present a comprehensive study of the methods, the aims, and the agencies of musical education, based on our current scientific knowledge of the psychology of music. In America at the present time there is an exceedingly widespread interest in music. Musical organizations, ranging all the way from pretentious and costly symphony orchestras, opera companies, and choral societies to small town bands, glee clubs, and church choirs, flourish everywhere. Conservatories and schools of music are filled to overflowing and independent music teachers find little difficulty in attracting all the pupils they can handle. Our public schools are not only introducing music into their programs of studies, but are busily enlarging their curricular offerings in the field. Our colleges of liberal arts and our universities often permit a major in music toward the degree in Arts. And although our musical culture may not yet equal that of the leading European nations, yet the demand here is so great, and our people are so wonderfully liberal in their financial support, that the United States has become the Mecca of the foreign musician.

Now all this can mean only one thing. It means that we are coming to see that musical culture can play a great part and possess a great value in human living; that musical education, whether given formally by teachers, or informally by concert courses, by participation in musical organizations, and so on, is exceedingly desirable. Such a strong popular demand imposes a great obligation, and constitutes a great opportunity for musical leadership. What the public needs above all else is guidance, and guidance made sane and sound by a broad vision of what musical education ought to be.

There are four groups for whom an analysis of the basic principles of musical training has definite value. They are the teachers of music in the public schools, the studio teachers of music, the music students, and, that broader and less well-defined class, the musical public. Let us try to understand the specific needs of each.

To begin with teachers and supervisors of public school music, we have here a group of musical workers who are to an unusual degree intelligently responsive to problems of method and much concerned to develop psychologically correct procedures. The field is a new one and as yet far from being completely explored, mapped, and standardized, and it is natural that those engaged in it should be sensitive to discussions of fundamentals. Indeed it is not too much to hope that the musical profession as a whole will benefit greatly from public school music, gaining from it a psychological and pedagogical insight that has been somewhat lacking.

But there is one central need which the training of our public school music teachers has not as yet adequately met. While much is made of method and procedure, altogether too little emphasis is placed on those general and basic principles of musical education on which any sound method depends. Methods and procedures may vary — principles remain the same.

Moreover, to try to teach method without principles is rule-of-thumb work, and even a good method so imparted will degenerate into formalism in the hands of the majority of teachers. In teacher training, principles are always more basic than technique and device. The public school teacher must ask not only "How shall I mediate musical material to my pupils?" but also "What are the great aims of musical training? What are the mental functions upon whose improvement progress in music depends? And how can class work be organized to achieve these aims and improve these functions?" It is precisely these questions which we shall attempt to answer.

Turning to the studio teacher, his great and even crying need is, again, not to be presented with a cut-and-dried "method," but to understand the living and immutable principles of his work. As a matter of fact, we have far too many special "methods" of teaching voice, piano, violin, etc., and, indeed, we have reached a situation that is positively dangerous educationally and that constitutes a menace to musical progress. It is almost a standing joke that any pupil who changes teachers finds that he must spend six months to a year in simply unlearning much of what he has already acquired, to fit into the arbitrary, rule-of-thumb procedure favored by his new instructor.

Let us say, then, that we have before us a studio teacher responsible for the musical development of a pupil. If he is a conscientious musical learner, with a truly educational viewpoint, some of the basic questions he must ask are these: "How can I know whether my pupil's abilities are such as to make his further musical training a worth-while enterprise for him? Just what capacities ought I to try to develop to lead him on toward the goal of competent musicianship? How in detail ought I to go about developing those capacities so that he may capitalize to the full his native powers? Just how

in detail ought I to go about developing those capacities economically, so that under my direction he shall not waste his time, his energies, and his money in lost motion? Specifically, what kind of results should I expect to produce in him if my teaching is efficient?" There is no true answer to be found for questions such as these in any rule-of-thumb method. They will not even occur to the teacher who is merely content to teach even as he was taught. To meet them we can be satisfied with nothing less than a sound philosophy of musical education based upon a scientific psychology.

Turning now to the music pupil, if he is at all serious he is making an investment of considerable time, of exacting effort, and of appreciable sums of money. Some of the questions he owes it to himself to face are these: "Am I working toward valid musical goals? Am I working toward a type of musical achievement for which I am personally fitted? Am I cultivating the kind of capacities which issue in musicianship? Am I working in a time-saving or a time-wasting way? Is there lost motion in my studying?" Again the answer must come from a psychological insight into the conditions, nature, and mode of acquiring musical culture. We may perhaps note that a question that is rarely and perhaps never legitimate for a pupil is: "Can I ever become a distinguished and successful concert artist?" For success of this kind depends on many conditions quite extraneous to musical culture itself.

Lastly, we come to the individual whose interest in music is general rather than technical. He belongs to a class whose needs and importance cannot for a moment be overlooked, for the general condition of musical culture and the status of professional and technical music are directly dependent upon the great musical public. In a financial sense this is perfectly obvious. But for us the more important fact is that the musical life of the nation ultimately rests upon the standards of

taste and discrimination of the interested layman. Some of the questions which such a person may legitimately ask are these: "How may I seek to increase my own powers of enjoying music? How may I increase my intelligence in musical matters and improve and render more accurate my sensitivity to musical impressions? How may I come to discriminate more keenly between the good and the bad in music? How may I know whether or not my children, who are studying music, are getting proper returns for my money and their time and effort?"

To repeat, questions such as these, which all arise out of legitimate and keenly felt needs, can only be met by an understanding of the methods, the aims, and the agencies of musical education, based on a scientific and correct psychology of music.

THE PRESENT STATUS OF THE PSYCHOLOGY OF MUSIC

But do we to-day really know enough about the psychology of music to provide a solid basis for a scheme of musical education? The answer is that we do. To be sure, there is a great deal of ignorance in the field. There are many special problems of high importance of which we know next to nothing. But for more than thirty years experimental work has been going on, and the broad lines of a scientific treatment have now been fairly laid down. We are able to say quite certainly and definitely what constitutes musical ability. We are able to make a good many suggestions as to how it may be tested and measured. We are able to formulate the legitimate goals of musical training. And we are able to lay down working rules for practicing and for teaching.

Experimental work in the psychology of music falls roughly into three divisions, which are, of course, closely interdependent. First we have the studies of the psychology of musical

talent. In this country the most outstanding contribution is that of Professor Seashore whose tests of musical talent are now widely used in our public schools. Less known to American music teachers, but still of the highest value, are the investigations that have for some years past been carried on in Germany. This whole body of work is of great interest to us, not only because it provides a practical means of measuring and testing a pupil's talent, but also because it gives us fairly definite ideas as to what constitutes musical ability and accordingly what capacities or abilities ought to be trained in building musicianship. Second, we have a large group of studies on the psychology of musical beauty. For instance, we know a good deal about the sources of our pleasure in tonal and rhythmic effects. Thus we are able to say with considerable accuracy just what we enjoy in music, information of the utmost value for all who try to teach people to listen effectively to music, to perform music properly, or to compose music adequately. Third, we have the psychology of musical training. The general psychology of learning about which we know a great deal will give us much insight into the proper conduct of both practicing and teaching, and this is effectively supplemented by investigations into the problems peculiar to musical learning as such.

At this point it seems proper to issue a warning about the scope and aims of the present work. The reader who expects to find in the following pages novel experimental contributions to the psychology of music will be disappointed. We shall attempt no more than a critical and orderly assembling of all the relevant scientific studies in the field and a formulation of their patent educational implications. This in itself, however, is enough to enable us to meet the leading questions regarding musical education.

THE VIEWPOINT AND ORGANIZATION OF THE PRESENT WORK

Our most central and essential contention is that musical training necessarily consists in developing certain, definable mental skills or abilities in listening to and dealing with music. Training which does not move in this direction may result in a sort of juggler's dexterity in dealing with some instrument or in moving the muscles which control the vocal apparatus, but it is not really musical training at all. We should never think of a music pupil as studying piano, violin, organ, or voice primarily. We should always think of him as studying music. And musicianship is an excellence of the mind, not of the muscles. The various instruments are no more than the mechanical means by which musical thought and musical feeling are transmuted into sound waves. The technique required to play or to sing is no more than the exquisite motor skill and control by means of which the musician comes to express his inner and mental apprehension of the meaning of the music itself. Indeed, as we shall see, the very development of executant technique is hardly possible apart from that mental grasp and insight which constitutes musicianship. It will be noted that this viewpoint tends strongly to obliterate the well-known curricular distinction between "theoretical" and "practical" music, although, for the sake of convenience, we shall retain these terms. In any true and valid scheme of musical education the courses in "theoretical" music — that is, harmony, counterpoint, form, etc. — and the lessons in "practical" or instrumental or vocal music, all must tend in one direction, namely, the building up of true musicianship. If anyone wishes to play an instrument or to sing properly, he cannot do so unless he has the mental grasp and the precision of feeling needed to enable him rightly to apprehend the music which he is trying to embody in sound. If a person wishes to

listen to music with the greatest possible appreciation, he can only do so if he is disciplined in those mental skills on which the apprehension of music entirely depends. And it need hardly be said that if one wishes to compose any music at all worthy of the name — that is, anything above the grade of a routine exercise in harmony, counterpoint, or form — he is engaged in an act of intellectual and emotional creation. All musical achievement of every grade, from the most elementary to the most complex, and of every kind depends on musicianship, and is impossible without it. This is certainly the only intelligent and defensible viewpoint in regard to musical education.

This fundamental thesis determines the general organization of our work.

1. Granted that the supreme aim of musical education must be musicianship, the first necessity is to analyze the nature of musicianship. We shall find that that very complex mental ability which has been variously called musicality, musicianship, ear-mindedness, and musical-mindedness is made up of a number of skills, which all work together as a unit, but which can be separated out for purposes of analysis. First among them are a group of expert skills in hearing; for the trained musician who listens to music hears many complexities and beauties which impinge upon the ears of the layman, but fail to register. But the musical experience is not wholly made up of auditory elements, and the musician also must possess a highly expert and refined sensitivity to rhythm. The total musical experience, as obtained by the expert musician, then, consists partly of auditory and partly of rhythmic elements, fused together into a unity and separable only for purposes of analysis; and the skills necessary for such an experience can all be trained. On the basis of this auditory-rhythmic experience, in terms of which music is actually

apprehended, there arise the two mental abilities which we call musical intelligence and musical feeling. Such is the sum-total of musicality, or the musical mind, in its fullness. And the supreme aim of all musical training is to perfect the skills culminating in proper hearing, in proper rhythmic response, in musical intelligence, and in musical feeling.

2. Musical training issues in three great functional outcomes — listening, performing, and composing. Each is an act of musical skill, and none of them is possible without some measure of musicianship. Of course, it is possible to listen in a crude and stupid way, and at a low musical level; but this simply means deficient musical-mindedness. And it is possible to play with some facility without any apparent musical meaning; but this simply means that the pupil has been drilled in empty technical tricks rather than disciplined in musicianship. And it is possible to write music “correctly” — that is, in accord with formal rules — but without any shade of artistic value. Each of these three outcomes involves a slightly different distribution and employment of the basic mental skills which constitute musicianship. But in so far as they are real musical outcomes at all, they are not possible without definite musical-mental training.

These three outcomes or aims, indeed, determine the whole course of any training that deserves to be called musical training at all. The fundamental criticism of the old-fashioned chorus singing in school is not that it was psychologically ill-directed, or poor from the standpoint of pedagogic method, though such indeed was the case, but rather that it did not appreciably further any of the three outcomes of musical training. The pupils did not learn from it either how to listen, how to sing, or how to make music. And again, this was the fundamental reason why it was so much disliked. The number of people who really dislike music when they have a chance

to discover what it is is very small. But pupils found formal, resultless choral work, music in name only, very boresome. The more recent musical developments of music in our public schools are educationally worth while precisely in the measure that they tie up to the three basic outcomes of all truly musical training.

3. We now turn to the agencies of musical education. In practicing we see the working principles of musical learning. We shall find that in organizing practice, whether this is done by classes learning songs or by individuals learning to play or to sing, both teacher and pupil must bear in mind that what is wanted is a great deal more than a mere exercise for the development of motor skills. Indeed, if we make it nothing but this, no great expertness will ever be achieved. Always practice must aim at musical goals, and it is just as important to study and understand the musical meaning of what we wish to play or sing as to work at the motor means for converting our musical ideas into sound. The problem of practice in musical training is precisely the familiar educational problem of directed study. This naturally leads us to an analysis of the work of the teacher in actual music lessons. The conditions of music teaching in the public schools and in the studios are so different (though the basic, determining principles are the same) that a separate chapter will be devoted to each. We shall conclude with a brief analysis of the status of the music teacher, and an outline of what seems a rational scheme of musical education for the individual pupil.

PART I

THE MUSICAL MIND:
ITS CONSTITUENTS AND TRAINING

CHAPTER II

THE AUDITORY EXPERIENCE IN MUSIC: ITS NATURE AND TRAINING

We are now to undertake an analysis of the first great factor in the make-up of the musical mind, namely, the auditory experience. At the outset we should repeat a point to which it will be necessary to return many times, namely, that music does not depend upon hearing alone. Psychologically it is based upon a living combination of auditory experiences and experiences of bodily movement and change. So in a sense we are departing from concrete reality when we single out the auditory factors from the totality which constitutes the musical mind. But this is necessary for purposes of clear understanding.

Our problem may be stated as follows: What part does hearing play in musical experience? Or, rather less exactly, what does the musician hear when he listens to musical tones? We shall find that musicianship depends upon the ability, partly native, partly acquired, to hear sounds in tonal relationships. That is, the musician hears tones, not as separate entities, but essentially in their relationships to other tones.

THE SENSE OF PITCH

Ultimately all musical hearing depends upon the native sense of pitch. This sense arises from the structure of the inner ear, which contains a harp-like mechanism, made up of a large number of separate filaments, each one of which is

capable of vibrating sympathetically in tune with a certain tone and transmitting its particular vibration-rate to the auditory nerve. Clearly our ability to discriminate between pitches is rigidly limited by the number and sensitiveness of the filaments in the harp of the ear. We can never hear more than a certain number of tonal differences for precisely the same reason that the piano can only yield a certain number of tones — because the receptive mechanism is limited.

The deepest tone we can hear under very favorable circumstances is one yielded by about 12 vibrations per second. If this number of vibrations is produced by an organ pipe, which sets up a smooth, rolling wave motion, most people will hear it, not as a series of beats, but as a remote and very deep tone. If, however, this number of vibrations were produced by electric sparks jumping a gap, we would not hear it as a tone, but as a rapid series of individual reports, the different effect being due to the different form of the sound waves. So far as we know, neither age nor training has much to do with determining the lowest perceptible tone.

The upper limit of audibility for tones is not so easily determined nor so certainly known. And individuals differ to a marked degree in their ability to hear shrill sounds. Here once again, training seems to have little effect. But one of the most interesting causes of individual difference is age. Ability to hear very high tones diminishes with age, and, sometimes, very expert musicians have been humiliated to find that young children can continue to hear sounds in the upper ranges of pitch long after they have become entirely inaudible to the adults. For the musician the ability to hear very high tones has one great importance. Differences in quality between tones are due to different arrangements of the overtones above the fundamental. But if the ear is not sensitive to high tones, this means that the upper overtones fail to register. So pre-

cisely the same instrumental or vocal tone may sound quite different to two persons who differ in respect to the upper limit of sensitivity to sound.

Of considerably greater significance for musical hearing is native ability to distinguish differences in pitch. Here we come upon a very remarkable individual variation. While some people will be found who cannot distinguish a difference as great as a semitone, so that C and C \sharp sound the same to them, others are capable of hearing a difference as fine as one two-hundredth of a tone. The ability to discriminate differences in pitch reaches maturity early in life, and the child of six or seven has as much of it as he ever will have. ✓

The elementary power to differentiate pitch is the foundation of many complex musical skills. On it depend such functions as tonal memory, accurate tonal imagery, the power to recognize and hear quality, the ability to sing and play in true pitch, and to some extent at least, the perception of harmony. Thus if the pitch sense is radically defective, it is impossible that the individual should possess a highly efficient musical mind. For instance, if a person cannot discriminate semitones, his musical education becomes impossible, for he is unable to hear the twelve tones of the octave, and cannot hope to recognize musical effects even on instruments which, like the organ or piano, have a fixed scale. On the other hand, it is possible for a person to have a sufficiently fine ear to become an excellent pianist, but to be incapable of developing skill on the horn, still less on the violin, where the player forms his own pitch. Nevertheless, we must remember that there are many other elements beside pitch-discrimination in musical ability, and that many instrumentalists, and even vocalists whose ears are so defective that they make serious mistakes in tonal placement, produce musically enjoyable results, partly because they wisely limit themselves to certain classes of

compositions, partly because they have good musical and general intelligence, and partly because most of their auditors have not a much better pitch sense than they themselves possess.

It will be asked whether, if the power to discriminate pitch is so important, it cannot be developed by training. The answer is that it can be trained up to a rigid physiological limit — ultimately determined by the structure of the ear — but never beyond it. It takes a good deal of training, either of the general and informal kind that comes with pitch-experiences in speech, in music, and elsewhere, or of a more formal and directed sort, to bring us up to our physiological limits. A great many very good musicians never reach those limits, as is interestingly shown by the use of the tonoscope, an instrument which visually registers the pitch of a tone while it is being produced. Experienced singers, singing into the tonoscope and watching the recording device, are often shocked to find the extent to which their pitch varies from the correct placement, and are able to improve once they see their defect.

Would it then be worth while, as part of a musical education, to bring every pupil up to his physiological limits in the matter of pitch discrimination? To do this requires simply a certain amount of directed effort and training. It can be done by making available to him some instrument capable of registering very small variations in pitch, and telling him to practice listening for minimal pitch differences. It is doubtful, however, whether practice of this kind is worth while. What we really need, as the basic condition of musical-mindedness, is not so much the development of the bare ability to discriminate pitch up to the limits set by nature as the ability to utilize the pitch sense for musical purposes. In other words, the auditory experience upon which music is based is more complex than the pitch sense proper. It is

a matter of understanding, combining, and using the pure sensory ability. Of course, without the sensory ability, we would be quite helpless; but if we have it, at least to a reasonable degree, the aim of all so-called "ear training" (which, as we have said, is really mind training) must be to use the basic sensory power for musically valuable and musically functional ends.

So it is that we are led to the study of the more complex and directly cognitive elements in the auditory experience which constitutes one part of the content of the musical mind.

THE POWER TO RECOGNIZE INTERVALS

For the musician, one of the most important auditory abilities is the power to recognize intervals correctly. This power is sometimes called relative pitch sense, but the expression is ambiguous and misleading. For interval recognition, as we shall see, is not a pure sensory ability at all, and belongs in the class of auditory perception rather than auditory sensation proper. It is quite a different affair from the power of pitch-discrimination, although dependent upon it. For instance, if a person is incapable of recognizing differences of a semitone, he obviously will not be able to distinguish between a major and a minor interval.

The great musical importance of interval recognition is obvious at a glance. Without it we cannot accurately hear a melody, and we fail to recognize the melody when repeated in another key or even an octave above or below its previous position. The devices of augmentation, diminution, inversion, and transposition by which composers work out the melodic ideas of their compositions fail to register; and we are quite unable to grasp the composition as it actually is.

There are several simple methods of testing the power of interval recognition. For instance, we may play to the pupil

a major fourth and then an augmented fourth, playing the notes one after the other, and ask him if the intervals sound differently and, if so, how. Or if we are dealing with musically educated persons we may play intervals and demand that they be named. Methods such as these, however, are defective, because such tests are far too easy and unless the individual in question has an extremely poor natural ear, he will solve them very readily, or at the most, if he has no musical training, will require only a little practice. Moreover, they fail fully to bring out and measure the true significance of interval recognition. By far the best mode of testing this power is to play an interval, such as a third or a fourth, with C, for instance, as the bass note, then to sound another note, such as F \sharp , and ask the pupil to take this as his bass, and to sing or pick out on the instrument the interval he has just heard.

Here we have brought out very clearly the essential nature of the ability to recognize intervals. A capable musician, dealing adequately with intervals, must be able to recognize their identity wherever and whenever they occur. A major third, for instance, must remain for him a major third, irrespective of pitch differences and differences in tonality. Thus interval recognition requires that the two tones be heard not merely as separate entities, each with a distinct quality of its own, but that they be mentally grasped in terms of their general tonal background. For instance, the interval C-E must be grasped in terms of the tonal environment of the scale of C major, while the interval F \sharp -A \sharp is grasped in terms of the tonal environment of the scale of F \sharp major; and the two intervals are judged to be the same — that is, both major thirds — because their relationship to the tonal background is identical.

This gives us a first glimpse of a principle of the highest importance for musical education — namely, the fundamental

significance of tonality for "ear training" — that is, for the training of the auditory functions of the musical mind. Psychologically speaking, interval recognition, which is an indispensable musical capacity, depends not on sensing the two notes as disparate entities, but on perceiving them as elements in an implicitly apprehended tonal manifold. It is this background which endows the interval with its distinctive nature.

Any special drill in interval recognition, then, is of secondary importance compared with drill on tonality. The use of skips in ear training should follow the careful establishment of the scale, and in fact be employed to increase the pupil's grasp of tonality.

THE POWER OF ABSOLUTE PITCH

The so-called absolute pitch memory, by which is meant the power to recognize a tone heard in isolation, and either to reproduce it without fumbling or faulty trials, or to name it, is so spectacular at its highest development that it has come in for much investigation by psychologists. It used to be thought that absolute pitch memory arose from a mysterious ability possessed by a few gifted persons, but wholly absent in most, a notion that was borne out by the inability to explain it of most musicians in whom it is highly perfected. More recent studies, however, have exploded this notion. Especially conclusive is the fact that it is found possible to train musically non-selected groups, such as college students, toward absolute pitch apprehension, and that most persons improve under training. And now we recognize that here is an ability shared to some extent by most people, and perhaps by all who are capable of musical achievement.

The ability to make correct judgments of absolute pitch does not depend wholly upon any one single factor. In the first place, it seems fairly clear that we cannot say that each pitch has a distinctive and unique *quale*, so that it is possible to

recognize C-ness, D-ness, G-ness, etc., as such.¹ At the same time, the various tones, as actually produced on ordinary musical instruments, do possess certain individual, non-pitch characteristics that undoubtedly help judgments of absolute pitch. For example, the leverage of the black keys of the piano is different from that of the white keys, so that differences in volume arise, while the use of different materials for the strings of many stringed instruments and different ways of hanging the strings on the frames give rise to variations in quality that provide numerous cues. (This, in part at least, explains why many people find it much more difficult to judge absolute pitch from tuning forks giving simple tones all of objectively equal volume than from ordinary musical instruments, and also why such judgments are easiest of all where a very familiar instrument, such as one's own piano, is used. But after all, these and other non-pitch factors are no more than adventitious aids to the formation of correct judgments of absolute pitch. Such judgments seem ultimately to depend on the fact that the various tones are arranged in a systematic order with regard to pitch, and that when we hear a tone, we never merely sense it in isolation, but always grasp it in its relationship to the whole acoustic background. In other words, we are back again to the factor which we discovered as basic in interval recognition — the tonal environment of the individual tone. We do not come to recognize any essential characteristic that can be called G-ness, C-ness, or what not; but we come to recognize G and C as elements with a fixed position in an ordered series.

The direct importance of absolute pitch memory in music is not great. Musical work greatly emphasizes relative pitch

¹ It has been claimed that each pitch has a distinctive vocality, *i.e.* vowel quality (Köhler, Baird), by means of which we can recognize it if our hearing is sufficiently sensitized.

judgments, and absolute judgments are more or less in the way of striking stunts, interesting for themselves, but valueless, or almost so, for artistic purposes. Indeed, some investigators have even claimed that musical training tends to destroy rather than build up the power of absolute pitch. From the standpoint of the psychology and pedagogy of music, and for the working music teacher, absolute pitch memory is of interest for two reasons. In the first place it is usually, but not always, a sign of exceptional musical endowment, of very fine and efficient ear-mindedness. The pressure of musical training, from the tonic sol-fa system onward, is all toward relativity. And if a pupil is able, in spite of this, to preserve a considerable power of absolute judgment, it means that he has kept an unusually firm grasp of tonal background, that somehow he has in his mind an unusually clear-cut and well-defined apprehension of the tonal system as a whole; and this argues an unusual auditory disposition. In the second place, we see here once more the tremendous value of the perception of tonality in particular, and of the tonal environment in general, for the efficient operation of the musical mind. There would be far less point in drilling a pupil directly in absolute pitch memory than in relative pitch memory (although such drill would certainly have some effect). Musical education, whether auditory or muscular, does not consist in teaching stunts. But our psychological analysis of absolute pitch shows again that one of the strategic points for musical training is certainly drill in the power to grasp the tonal environment and to recognize tonality.

In connection with absolute pitch, one more comment ought to be made before we pass on. When a pupil has incorporated in his mind the system of sounds that constitutes the tonal background for all pitch judgments, both relative and absolute, he does not fix it in any rigid and inflexible way. He does

not, as it were, tune the mind to concert pitch, or to French *diapason normal*. His mind adapts itself very readily to the pitch standards of the instrument that is being employed, so long as these do not vary too excessively from normal.

THE HARMONIC SENSE

Another of the essential constituents of the musical mind is the group of abilities which we are to consider together as constituting the harmonic sense. There are three of these — first, the ability to distinguish between consonance and dissonance; second, the ability to recognize chords as individual entities; and third, the ability to analyze chords into their constituent single tones.

1. Up to this point we have been dealing with the hearing of tones sounded singly. When two tones are sounded together, however, we have a situation different from any that we have yet analyzed. For the factor known as consonance enters in. Scientific and musical literature reveals an extraordinary divergence of opinion as to the nature of consonance; but, all things considered, the best criteria are those laid down by Seashore. These are the following: (a) Blending: That is, if the two tones seem to blend, to belong together, or to agree, they are to be regarded as consonant; whereas if they seem to disagree, or not to belong together, they are dissonant. The tones of an octave, for example, blend almost perfectly, and yield the highest possible degree of consonance, whereas the tones of a minor second constitute a violent dissonance. (b) Smoothness: If we sound the tones of a minor second, we become aware of a rapid series of beats in the resultant sound, which accordingly seems rough and irregular, while if we sound an octave, such beats are practically absent. (c) Purity: If we sound an octave, the resultant sound has the characteristic of purity, and is hardly richer or more

complex than either one of the two single tones sounding in isolation; but if we take a major third, the resultant sound is rich and complex. This is the third criterion of consonance and dissonance. Using these criteria, it is possible to rank the various combinations of two tones that are possible within the octave on a scale of greater or less consonance. We should notice that consonance differs in degree, and is not a characteristic of compound sounds that is either absolutely present or absent.

Consonance and dissonance are often confused with pleasantness and unpleasantness, but this is a fundamental error. Extreme dissonances, if properly treated, may be a source of the keenest musical pleasure, and music that limited itself to the more consonant combinations would seem very thin and commonplace indeed. Another mistake, commonly found in texts on formal harmony, is the claim that dissonances require to be resolved, while the consonant combinations give a feeling of repose. There is the celebrated tale of Mendelssohn being unable to sleep and having to come downstairs from bed to resolve a dominant, seventh dissonance that someone had played on the piano without leading it to its proper harmonic sequence. The demand that certain chords be resolved in certain ways depends, not upon the acoustic or even psychological character of the chords themselves, but on the laws of harmonic progression that are in part conventional. And in any case, modern music has quite sufficiently proved that it is allowable to leave dissonances "hanging" without resolution in the ordinary sense.

Our awareness of consonance depends on something more complex than pure sensation. It is a judgment about sensations, and is based on non-pitch elements in musical sound. To some degree it can be cultivated, but to a large extent it seems to be native. We may perhaps hold that persons who

have extremely sensitive hearing, so that beats, fusions, and the purity or richness of sounds are very distinctly heard, readily give correct judgments of consonance. Here once more we have an ability which probably need not be cultivated for its own sake or in isolation, but which is extremely important as the basis for certain types of musical experience. What musical education should aim to cultivate is, not the sense of consonance in tonal combinations by itself, but its results in actual use and practice — namely, the harmonic sense proper, and the power to perceive quality or timbre.

2. The ability to hear, identify, and recognize chords is one of the basic constituents of musicianship. When we properly hear a chord, we do not perceive it as made up of its constituent single tones, but rather as a unity, with an individual and special character of its own. The ability shows itself in the following ways: power to distinguish between the major and the minor triad; power to distinguish between the dominant triad and the dominant discords; power to distinguish between the various related and similar discords. Drill in formal harmony will greatly increase our efficiency in hearing chords because we then single them out and label them with their technical names, and these names themselves operate psychologically to call our attention to the sound differences between the actual chords. It is also possible to increase our power to identify and recognize chords without the study of formal harmony, simply by direct practice in analytic listening, with attention carefully directed toward the differences in sound.

Chord recognition is a complex, psychological ability which arises out of two simpler and more basic powers — the grasp of tonal background, to which we have already referred, and the sense of consonance and dissonance. It is from the sense of

consonance that chords derive their distinctive individuality, the *quale* which distinguishes them from one another, the quality of major-triad-ness or dominant-seventh-ness etc. But besides this, chords, like single tones, are essentially elements in the tonal environment, without which they would lose their meaning. It is by means of our grasp of the tonal environment as a whole, and our power to manipulate and use it, that the tonic triad of C major sounds like the tonic triad of G major, or the diminished seventh of D sounds like that of D \sharp . Unless we are able to recognize the similarity of the same chords in different keys, our harmonic capacity is defective, and we lack one of the most important auditory constituents of the musical mind.

It has been said that the harmonic sense may be trained by direct effort. But this is probably not the best way, at all events at first. If we start our pupil out by training him in a grasp of the tonal background, we begin at the true beginning of all auditory musical skill, and may feel sure that, among other powers, he will acquire a harmonic grasp that is firm, accurate, and efficient. With this as a basis we can go as far as seems wise and necessary with special drill.

3. The ability to analyze the constituent tones that make up the chord must be distinguished from the ability to recognize and identify the chord itself. Nevertheless, this last ability is exceedingly important for the musician, for it provides part of the basis for the hearing of melody. It is one of the indicators of natural musical capacity. It can be directly trained, and as a matter of fact a good deal of musical material proper, such as arpeggios and broken chords, does offer direct training in this skill. But on the whole it grows out of the same factors as the chord sense proper, and its efficiency is most fruitfully increased by indirect means.

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THE POWER TO DISCRIMINATE QUALITY

The power to identify and differentiate the quality, or, to use the more precise and technical term, the timbre, of musical tones is really a variant upon the ability correctly to hear harmony. For it is a well-established fact that when we listen to what we take for the single tones of the voice, or of some artificial instrument, what we actually hear is a chord with a strong bass or fundamental note, and a large number of upper notes or overtones. It is the arrangement of these overtones above the fundamental that determines the distinctive quality of the clang that we hear. In other words, when we listen to individual musical tones, what we actually hear is a series of subliminal chords.

This type of auditory skill calls for a good deal more in the way of direct training than most of the other capacities with which we have been dealing. The ordinary attitude in listening to music is to pay attention to the melodic, harmonic, and structural sequence, but not to the tonal quality itself, unless this is forced upon us in some way, as by the use of the *vox humana* stop of the organ, the combination of the flute with the coloratura soprano voice, or the production of extremely harsh and bad instrumental or vocal tone. In a word, most people have the capacity for hearing the obvious differences in quality, but it takes special training, and drill in skilled mental attitude, to attend to quality as such and recognize it as good or bad. Nevertheless, this is an auditory ability which no musician can afford to lack. It is one of the surest signs of musicianly listening to music to recognize the qualitative shadings. In any instrumental work, the power to judge quality is essential for artistry. (This applies both to the natural instrument, the voice, and to artificial instruments of all kinds.) For instance, to the well-trained piano student, the difference in a single tone produced with the dampers on

and off the strings should be as unmistakable as the difference between the flute and the violin to a layman.

Our ordinary methods of musical education show a great weakness here. This is largely due to the fact that we tend to turn out specialists in a single instrument. Familiarity with more than one instrument, participation in ensemble work, and, if possible, orchestral experience properly directed will be found of great aid in building up the sense of quality differences. What is wanted is an intelligent and persistent direction of the attention to this point, a willingness to listen carefully and experiment long for the precise subtle shade of quality that is desired. Hans von Bülow's notes to the Beethoven Sonata *Opus 53* offer an excellent practical suggestion here. He urges the student to try to reproduce on the piano the various shadings of orchestral color. Although such an effort may not succeed very far, it is a thoroughly musicianly suggestion, and pedagogically quite correct. One of the sure marks of ear-mindedness is a love of beautiful quality, and a willingness to work hard to produce it.

THE POWER TO APPREHEND MELODY

A fundamental weakness in many listeners to music, and not a few music students, is that their power of hearing melody is either naturally defective or undeveloped. It is surprising how many people will fail to grasp the drift even of a simple melodic outline against a diatonically harmonized accompaniment. And surely nothing could be more ridiculous or pathetic than to take a person who is unable correctly to hear even a simple tune, and "expose" him to an intricate series of variations, to a composition that elaborates some subtle thematic ideas, or to a four-voiced fugue. This would be precisely the same thing as talking to him in a language of which he knew nothing. To a mind such as this, music is

simply a meaningless chaos of sounds, to which he may submit because it is required or proper but which he can never enjoy.

Clearly then, one of the great outcomes of any kind of musical education must be the ability to hear melody. This ability is built up in two ways, indirectly and directly.

1. The perception of melody depends in part on the interval sense, and partly on the harmonic sense (*n.b.*, we are disregarding for the time being the rhythmic aspect of melody). In primitive music, melody depends on nothing but interval sense, for such music is homophonic and knows nothing of harmonic progression. But for us, melody is something more than a mere free curve of pitch. It is also the outline of a harmonic series. So the indirect education of the melody sense depends on familiar factors — chiefly upon giving the pupil a firm grasp of the tonal background or environment. In this way intervals become meaningful, and in conjunction with the ability to hear consonance and dissonance, chords come to be identified clearly. And one outcome is likely to be the emergence of the power to apprehend melody.

2. But it is a wise measure of training to call special attention to melody and give special drill in apprehending it. The student of violin or voice will hardly need any extensive special practice, because the conditions of his instrument determine the matter for him and fix his attention firmly upon the melodic outline. The same is true more or less of the organ student, who is required to play the melody on a separate keyboard. The chief difficulty comes with the training of the piano student who is very apt to apprehend a piece of music as a series of masses of tone rather than a horizontal melodic outline.

THE POWER TO USE AUDITORY IMAGERY

The ability to use auditory imagery, or “inner hearing,” is another most important function of the musical mind. In

some cases this power seems inborn, and we find an individual who naturally thinks and remembers in terms of musical tone. Where this is the case, there is almost certain to be high musical ability. But it is a power which can be cultivated by almost everyone, and to train it should be one of the tasks of musical education.

We shall have a great deal to say hereafter about the uses of auditory imagery or inner hearing, and so we may be content at this point to indicate its importance quite briefly. For the performer, the power to image the composition as a whole, or the individual passages in it, is extremely important and valuable in many ways. It helps him to decide how to render and interpret it without exhausting experiments, which indeed may defeat their own ends because attention during intensive practice is so apt to become fixed on the motor adjustments rather than on the sound values. The composer is always advised to train himself to hear his composition inwardly as he works it out. And the critical listener employs his power of inner hearing as the best working standard of judging a performance that is available to him.

In seeking to train the power of inner hearing we should remember that it has close relationships to other types of experience, and that these can be capitalized to help it along. For instance, tonal imagery is likely to be very closely connected with muscular sensations of various kinds. Many persons inwardly sing or whistle a composition as they imagine it, and could not imagine it without so doing. Sometimes we have the experience of conducting rather than whistling or singing. And very often, indeed, in working out four-part harmony, motions will be made with the hand, as though we were playing the chords we wrote or thought. Then again the auditory imagery of music is commonly very closely connected with the sight of the musical score, and less commonly with

the sight of a keyboard where we, as it were, see the composition played. These connections ought to be employed to help the efficiency of the musical imagery itself.

THE PLACE OF EAR TRAINING IN MUSICAL EDUCATION

So far we have been presenting an analytic discussion of the scientific basis of ear training. It is now time to bring our findings together in synthetic form, and to indicate their pedagogical bearings, always with the emphasis on general principles rather than on the detail of method and device. The term "ear training," to be sure, is very misleading, as we have insisted, for we can do little or nothing to increase the native sensory powers of pitch discrimination and the discrimination of degrees of consonance on which all auditory skill depends. We retain it under protest, because it has come to have a conventional meaning, but we must always remember that in fact we are training complex mental functions rather than basic sensory powers.

In undertaking a course of ear training, our emphasis and procedure will vary to some extent in the several branches of musical work. The needs of a class in singing in school will not be quite the same as those of even the elementary vocal student of the studio teacher; and the teacher's opportunity will be very different. Again, the ear-training needs of the vocalist are not the same as those of the instrumentalist, because of radical differences in such matters as the problem of tone production and the problem of good phrasing, etc. Again, the player of an essentially homophonic instrument like the violin will have problems in connection with hearing melody and harmony that are different from those of the pianist. And these differences must be taken into account. But in general, effective ear training simply consists in applying the known principles of learning to the particular field of

musical auditory skill. We must decide what connections or habits we wish to have formed, and encourage the use and repetition of them, while avoiding and discouraging the use of wrong connections or habits. And the foregoing discussion has made reasonably clear what the proper habits of auditory performance are that the musician must seek to build up. They are the following: the power to grasp and utilize the tonal background or environment; the power to identify and recognize chords; the power to analyze chords into their constituent elements; the power to discriminate fine shades of timbre or quality; the power to hear and grasp melodic outline; the power of inner hearing or tonal imagery. To establish these is the aim of ear training. The power to recognize and name intervals and the power of absolute pitch memory, as we have seen, are more or less in the nature of stunts rather than functioning musical abilities, though they have their interest and importance as indicators of musical talent.¹

The question now arises as to how these aims shall be achieved. We may use formal exercises, or, on the other hand, rely directly on musical material. Speaking generally, it is best to use formal drill exercises very sparingly with elementary pupils. Drills should be employed only when and where the pupil is able to see that they are necessary in helping him to reach some genuine functioning, result — that is, when the pupil recognizes that they build up in him skills which he genuinely needs to produce musical results which will satisfy him. Studio teachers are not apt to err on the side of too much ear-training drill, but sometimes public school music teachers do this. Such procedures are bad pedagogy because drill is useful only in so far as it contributes to meeting felt needs.

¹ Drill in absolute pitch memory is now being used in some schools in England as a means of bridging the gap between the relative pitch names of the tonic sol-fa system and the fixed pitch designations of the musical score.

And it implies a misconception of the true nature of ear training, which aims at building mental skills which can be exercised very well in the medium of actual musical material if this is properly presented.

1. Let us begin by discussing the use of formal drill exercises for the building up of auditory technique.

A. The most basic by far of the habits we have brought to light is grasp of tonal background. To develop this, no drill material compares to the familiar scales and arpeggios. But scales and arpeggios should not be employed in at all the conventional manner. Our aim here is auditory, not motor skill. So we will not undertake to emphasize such matters as bowing, position of the left hand on the violin strings, equalization of the fingers, turning the thumb under or the fingers over on the piano keys, changing and equalizing the vocal registers. Rather we will direct attention upon the sound relationships of the scale. This is a type of scale practice largely ignored by the studios, where the aim is almost always motor agility. And assuredly it is the only type of scale-work suited to public school needs.

It should be very strongly emphasized that this kind of ear training does not aim at a formal or abstract grasp of tonal relations, or an ability merely to name and calculate the elements in the scale, even though, as we shall see, it is the proper line of approach to the later study of formal harmony. What we want to build up is a direct feeling for tonality. This probably depends in part on non-auditory factors, such as muscular tension which is set up by a given tone, and causes us to expect a following tone as satisfactory, the satisfaction issuing in relaxation. (Of this the most obvious instance is the "tendency" of the leading note to move to the tonic.) Tonality is the basic convention of occidental music. Our sense of it consists in having rather definite expectations aroused by the

hearing of a tone, the feeling of fitness or satisfaction when these expectations are met and of annoyance and confusion when they are rebuffed. In the mind of the musician, the tonality-feeling actually functions not so much in a conscious, abstract awareness of the required relationships as in a power to apperceive every note in terms of its tonal background, which gives it a meaning as an element in an ordered scheme. This is the psychological foundation of interval perception, absolute pitch memory, and melodic perception, and is one of the two factors involved in harmonic perception.

The great educational value of solfeggio in public school music work is precisely its strong emphasis on tonality and its direct use of the scale. Much recent discussion of solfeggio shows but a poor appreciation of its true significance. Alternatively its use has been too sweepingly advocated, and too sweepingly condemned. In fact it is neither a fetish nor a bogey. It is a device by which key relationship and tonal background can readily be made explicit, and for this it should be used.¹ The teacher of instrumental music, particularly the piano teacher who works from the first with a fixed scale visually represented on the keyboard, often tends to feel that solfeggio is superfluous or even useless. But indeed he can learn much from its application under public school conditions. The fixed piano scale, to which the pupil is introduced from the start, often operates to obscure the relationship of the tone to the key, which is so essential in proper musical hearing. There is a decided danger that the pupil who has studied only piano will never come to recognize the quality of the elements of the scale as such — the dominant, the subdominant, the leading note, etc. — until he begins formal

¹ Farnsworth has worked out a plan by which elementary classes can be taught the "tendency" or specific *qualé* of each tone of the scale by solfeggio. *Vide his Education through Music.*

harmony, whereas his tonality sense should be cultivated far earlier. Instrumental teachers may well take a leaf from the book of the public school music teacher and definitely employ the scale as basic drill material for ear training.

B. Formal drill in the discrimination of timbre has been discussed, at least by implication. The problem bulks largest of all in vocal work of all kinds. It is all-important that the vocalist learn to distinguish early between good and bad tone. He must come to be able to recognize the two distinctive kinds of bad vocal tone — nasal tone and throaty tone — and at the same time to learn by actual experience the meaning of good tone. The reason why this piece of ear training is peculiarly essential for the vocalist is twofold. First of all, the human voice will yield a greater range of timbre differences than any other unitary instrument (the organ, of course, is essentially a combination of many instruments). Secondly, the vocalist cannot control the vocal apparatus directly, as the violinist controls his bow and the pianist his hands. Good vocal control is always indirect, and is made by auditory appreciation of the results produced. This point will be found very basic when we come to discuss vocal technique.

Both instrumental and vocal pupils should be encouraged to play or sing separate tones or chords and to listen very carefully to the timbre produced. With very young children in school it is true that we may not insist directly and explicitly on "beautiful tone," which is a concept they may have difficulty in grasping. With them it may be better to insist that the tone of the voice sounds "appropriate," *i.e.* that it properly expresses the sense of the song, which in well-organized school material should be embodied both in the music and the words. In any case, and whatever devices we may use, the point is that there is more involved in teaching music than the problem of motor skill. We are here trying to build up in

the pupil a quality-hearing attitude or habit of mind. It will often be found that very talented children take pleasure in experimenting instrumentally or vocally in producing various shades of timbre, and here, as often, the impulses of genius give us a hint as to the proper pedagogy for normal children.

C. Formal drill procedures may well be used to help the grasp of melodic outline. The musical score, of course, gives a perfectly accurate representation of the melody, but this is conventional and symbolic and something more direct is needed. The three obvious modes of approach are the following. The pupil may be led to visualize the melodic curve by graphic methods. He may be led to feel it by adjusting his vocal apparatus and sliding up or down till he finds the proper pitches one by one. And he may be led to hear it and grasp it by means of auditory imagery. Devices meeting these requirements exist in plenty.

One special problem in teaching melodic outline is that of the so-called monotone. Many experienced supervisors doubt whether many true monotones exist. And it is certainly true that teachers who systematically use the threefold approach — visual, kinæsthetic, and auditory — to the teaching of melodic perception, will find that very few pupils fail ultimately to “carry the tune.”

Another special problem here is presented by the piano student. One of the common faults of piano playing is a defective emphasis upon the melody, and this in turn is due to defective musical training. The nature of the instrument is not favorable to the automatic development of this piece of musical-mental skill, and the piano student rather urgently needs some formal drilling in melody perception. It would often be far sounder pedagogy to have him single out and play the melody by itself than to use the standard — and questionable — device of practicing the hands separately. The piano

student should also be encouraged to sing the melody as he plays. Any device which throws the melodic outline into relief is valuable.

D. Procedures of the same kind can readily be used in chord recognition and analysis. Here the most serious difficulty is the development of the skill in students of homophonic instruments, and in vocal students. For always the drills turn on giving the pupils a wealth of harmonic experience, and directing their attention upon it analytically. The public schools can help very substantially here, for drills in harmonic perception are readily possible in the upper grades, the class forming and singing the three- or four-part chords, or some members of the class singing the chord while the rest listen.

E. In working to build up the power of inner hearing, some experience with singing is an immense advantage. Indeed, for the singer, the problem of "auditory imagery," at least for single tones, should hardly exist at all, for he is trained to produce just those inner muscular adjustments upon which we have found that inner hearing largely depends. Accordingly our suggestions will be made from the standpoint of the instrumentalist. For cultivating inner hearing, the following procedures may be found valuable. (a) Get into the habit of thinking through compositions away from the instrument, feeling free to hum, whistle, or sing them in part or in whole. (b) Practice trying to get the sound of compositions by studying the score, and then check up on your imagination by playing it through. (c) Practice sometimes on a dumb keyboard, concentrating not on motor adjustment, but on imaging the sound of the composition. (d) In practicing, stop now and then at the end of a bar, imagine the sound of the next, and pick up the thread at the next but one. (e) Play accompaniments, imaging the solo part as clearly as possible. All in all, the great point here as elsewhere is directed practice, look-

ing toward the establishment of the definite habits we wish to set up.

2. Especially for elementary pupils, the use of actual musical material for ear training is preferable to formal drill. The essential point here is to teach the composition as a system of sounds rather than of motor adjustments.

For the development of grasp of tonal background, the two outstanding devices in using musical material are key analysis and transposition.

Key analysis should always be made, so that the pupil understands the transitions of tonality through which the composition moves, and so that accidentals are not mere puzzles, but possess a meaning. And his understanding needs to be in terms of sound — that is, he should know through just what series of tonal environments he is passing, and how each one sounds. An excellent method is to have him build the scale of each key as it occurs. This can be done both in studio work and in the upper grades in school music. For the studio pupil this is a much better way of dealing with scale practice than to have him move through the twelve tonalities from tonic to dominant in series.

Transposition presents a peculiar problem. For the vocal student, even the very elementary vocal student, it is natural and easy. For the instrumental student, however, it is difficult, because the new key means a different motor adjustment. The manifest solution is for the instrumental teacher to follow the lead of the vocalist, and particularly of the teacher of public school singing. The pupil should be habituated to play simple, unmodulated compositions in several keys, and to do so first of all by ear alone. Then, when he knows the relationships of sound, he may proceed to whatever analysis his general mental maturity may make possible. Such a plan, systematically followed out, gives good results, and not

only endows the pupil with a most valuable musical skill, but also greatly strengthens his grasp of tonal relationships and backgrounds.

All in all, then, a sound musical pedagogy demands that far more attention be paid to the auditory element in music. We should not practice merely for dexterity, for music involves skills of hearing just as much as skills of muscular action. One of the great complaints about many music pupils and some artists is that they fail to hear their own effects correctly. This means a radically defective musicianship — a musicianship weak in its most essential foundation. For surely if music does not mean the expert handling of tonal effect, it means nothing at all. Such weakness can be entirely avoided by directed practice, following psychologically correct methods of learning, and aiming at psychologically valid goals. Progressive teachers of vocal music in our public schools have come to recognize the force of this principle in their work, and it is high time that it was adopted by all serious teachers of instrumental music, and by studio teachers of vocal work into the bargain.

CHAPTER III

THE RHYTHMIC EXPERIENCE IN MUSIC: ITS NATURE AND TRAINING

Many very good music teachers suppose that music depends wholly upon auditory experience, and that the musical mind is based solely on the ability to hear music properly. This is a mistake from the standpoint of a correct psychological analysis of music, and it leads to serious errors in teaching. For it means that we tend to ignore, or at least that we fail to understand and correctly train, the all-important sense of rhythm. Rhythm as such is not an auditory experience at all; and our experience of rhythm depends, not on what we hear, but on the feel of muscular play and activity in response to what we hear.

If we want to begin with some *prima facie* proof of the fact which every psychologist clearly recognizes, namely, that rhythm depends on muscular action, we can obtain it from two readily available sources. First of all, let us carefully watch an artist performing music. If he throws himself into his task, and produces what we would regard as a musically striking result, we shall always see that his whole body is, as it were, caught up in the current of the music, and beats and pulses with its beat. The most obvious case, of course, is the jazz band, where the performers grotesquely exaggerate the rhythmic element; but in a lesser degree the same thing is apparent in any positive and forceful musical performance.

In the second place, let us reproduce in ourselves some of the

conditions set up in the psychological laboratory. That is, let us carefully attend to our own experiences in listening to music. We shall certainly find that we feel the beat of the music in terms of bodily and muscular reactions. Here again, the supreme illustration is the tendency to dance or march to music. Originally music was, of course, very closely united to the dance, and though our reactions to a sophisticated composition are much more subtle than those of the savage to his drums and wind instruments, they are none the less physical and muscular, in part at least.

So we come now to deal with the nature and training of the second chief constituent of the musical mind, the rhythmic muscular response to music. If we want to know how the feeling for rhythm can best be trained, if we want to know what is the matter with the pupil in whom it is lacking, and if we want to build it up in those with whom it is weak, the primary thing to understand is that it depends on muscular reaction. The musical experience, whether of the listener or the performer, is a great deal more than merely one of hearing tone clearly, and correctly analyzing what we hear. For without muscular reaction, and the feel of muscular reaction, there would be no such thing as the type of musical enjoyment with which we are familiar, and which we must try to teach.

THE GENERAL NATURE OF RHYTHM

The experience of rhythm occurs whenever impressions derived from the senses are perceived in groups or sequences. It is not necessary that the groups shall all be equal in size or spacing. For instance, we have a rhythmic arrangement in decoration when some design is repeated again and again in larger and larger, or smaller and smaller, sizes. The essential feature of the rhythm is not fixed, hard-and-fast regularity, but the swing of a sequence that we actually sense. In the

series of repeated motives in the decoration of a Grecian urn or in the beat of a march, we have a grouping in terms of equal elements, and this, of course, makes the rhythmic scheme very clear and prominent. But it is the grouping rather than the equality that is really the essence of the matter.

Rhythm can exist in fields other than music. We find it in the decorative arts, where the same design occurs again and again. We find it in architecture, where a sequence of grouped details contributes to the æsthetic impression of the whole building. We find it in the arrangement of lines, colors, and masses in pictures. This in itself should help us to understand that it does not depend directly upon any of the outer senses, such as hearing or vision, but is contributed by the operation of another sense, namely, that of muscular movement.

Rhythm in music, however, is of superior power, and much more compelling than visual rhythm possibly can be. For example, it would be almost unthinkable to try to dance in time to flashes of light rather than musical beats. The music snatches us up and sweeps us away, we are in it, and it is in us, to an extent that would be beyond the bounds of possibility for any arrangement of visual impressions. The reason is that the body resounds more strongly, and responds more profoundly to sounds than to sights. This is simply part of our native endowment. And the power of sound over the human body explains the strange and magical effect that music has upon us.

Almost all music is rhythmical. From our point of view it is interesting to note that some of the church music of the Middle Ages was deliberately cast in a non-rhythmic mold because the composers held that rhythm was a bodily function, to be avoided in connection with sacred things. This, of course, was a perfectly sound piece of psychologizing on their

part. But it need hardly be said that the scope and appeal of non-rhythmic music is exceedingly limited.

THE ORGANIC BASIS OF THE PERCEPTION OF RHYTHM

In seeking to make clear the precise nature of the organic basis of our feeling of rhythm it is necessary to enter upon a somewhat careful and rather technical piece of analysis. But its practical importance both for the understanding and proper teaching of music will speedily be made clear.

We have laid down the well-established fact that our feeling of rhythm comes from our feeling of muscular response in general. This is certainly true, and practically every important study of rhythm would be found to corroborate it. It is, of course, true that, if we watch a person who is experiencing rhythm, we do not always see the muscular beat and play that is actually going on. This is partly because such movements are often very small and so are well hidden by the clothing. Partly also it is because the muscular play may be going on in hidden muscles, such as the diaphragm. It is also true that often when we ourselves are experiencing rhythm we are not directly conscious of movement, but only of the grouping and regularity of the sense impressions. But if there were absolutely no muscular movement at all, not even the faintest incipient movement, if when we listened to music we were as still as statues and made literally no muscular response, the regularity of the impressions would not register, and we would fail entirely to catch the rhythmic drift and beat. Given fine enough recording instruments placed on the right parts of the body, we would always find that when rhythm is being experienced, the organism ripples and pulses, and that this determines the feeling of the rhythmic grouping.

So much is fairly simple and certain, but now we come to a complexity. For our muscles and sets of muscles differ

greatly in size; some are big and some are small. And moreover, our muscles do not merely lie loose in the body but are attached to the levers of the skeleton. And again, some of these levers are long, while others are short. Now everyone knows that a long lever, which essentially constitutes a pendulum, naturally swings more slowly than one that is short. So here is an explanation of the way in which we sense slow and rapid rhythms. We feel the beat of a slow and ponderous rhythm in the large muscle sets that are attached to the long and slow-moving body pendulums. We feel the beat of rapid and hurrying rhythms in the small muscle sets that are attached to the short and quickly moving body pendulums. To give a concrete instance, the writer regularly feels the ponderous rhythm of the opening measures of the second movement of Schumann's "C-Major Fantasy" in terms of a swing of the whole body, while he feels the beat of the "Minute Waltz" as a sort of rapid chattering of the teeth.

The body, in fact, may be regarded from one point of view as an intricate collection of metronomes, set at different speeds, which are set going by the muscles, and from which arise our sense of rhythmic groupings. In one important respect, to be sure, this is an over-simplification, for our skeletal levers do not operate like free-swinging pendulums but have their speeds controlled by the pull of the antagonistic muscles attached to them. Thus while we may in a general way expect that slow rhythms will be sensed in terms of the action of the more massive muscle sets, while fast-moving rhythms are sensed in terms of the smaller sets, there will be a wide range of variation. The same rhythm need not be sensed in precisely the same manner by each of a group of listeners, or by one of them at different times.

Putting the matter now with more precision, we may say that rhythm is sensed in terms of the coördination of the larger

or smaller muscle sets of the body, and that a single rhythmic entity — an iamb, a triplet, etc. — is constituted by a single muscular coördination.

Now it may be said that this whole account seems strange and unreal, for what we actually experience in rhythm is the grouping of the sense impressions, not the muscular reactions at all. To express the difficulty somewhat differently, it may be felt that we have been confusing what takes place when we actually beat out a rhythm with what takes place when we listen to it. To meet this perfectly proper question we must go into one further point of technical psychology. When we listen to any rhythm — say that of a common time measure — the first beat of the bar comes out with special distinctness. The reason for this is that human attention is not continuous, but fluctuates in regular waves. We attend most clearly to the first beat, and so it becomes for us the most prominent of the four. Now it has been found that such fluctuations of attention are due to muscular interplay. We give attention most keenly to those sense impressions which coincide with the muscular pulses. So the fine muscular movements on which rhythm depends are not usually sensed as movements at all, but register in consciousness as a focusing of attention on the impressions which synchronize with them, so that these are especially clear and prominent. To be sure, there are important differences in the rhythmic experience of the performer or conductor, and the listener. The motor coördinations in terms of which the performer senses the rhythm must be adjusted to the needs of the instrument or the voice — that is, they must be such that they become converted into sound waves. The motor coördinations of the listener are altogether more arbitrary and individual. But the point is that muscular coördination occurs in both listener and performer, and constitutes the basis of the experience of rhythm.

A correct comprehension of these points in the psychology of rhythm is vitally important for its proper pedagogy.

SUBJECTIVE AND OBJECTIVE RHYTHM

Still further light on the nature of the rhythmic experience may be gained from the phenomenon of what is known as subjective rhythm. If we use some means to produce a series of sounds that are equal in spacing and intensity, and so not divided at all into groups — a good instance being the clicks of a metronome — we almost always find that we actually hear these sounds in rhythmic groupings. The ticking of a watch, the beat of a metronome at various speeds, the sound of a railroad car running over the ends of the rails — these, and other objectively equal series of sounds, are actually perceived by us in groups of two, three, or four, and sometimes even in groups of six units. Every other beat, or every third, fourth, or sixth beat seems to stand out with special prominence. This in itself is added proof that rhythm is not something in the sound itself, but a factor which we add to the auditory experience. On the mental side, it depends on the fluctuation of attention, which means that we attend with special clarity to one element and let the others go. On the organic side it is due to a coördination that is set up in some part of the body as an accompaniment to the sound series, which brings certain elements therein to special prominence and distinctness. Whether we hear a subjective rhythm as a two-time, three-time, four-time, or six-time grouping depends on our own attitude or set. That is, it depends on the way in which we, as it were, focus ourselves upon the sense impressions, the way we arrange ourselves to receive them, the way we allow ourselves to be affected by them. By an act of will we can change the beat of the subjective rhythm from two to three, and so on. The reason why such a rhythm is very rarely grasped as a

grouping of five or seven units is that all our rhythmic training is against such a result, so that we do not set ourselves to respond muscularly to each fifth or seventh unit with anything like the ease with which we set ourselves to catch each second, third, fourth, or sixth.

The great difference between this experience of subjective rhythm and the objective rhythm of music is that, with the latter, the sound series itself is arranged in such a way as to give us the cue for setting ourselves. That is, it is arranged to make certain units specially prominent, to cause certain groupings to stand out distinctly. But it is not the arrangement of the impressions, but our muscular response to them, that actually gives us the feel of the groupings. There are people who cannot grasp even the most obvious and exaggerated march or waltz rhythm. In the most literal sense, their bodies fail to "keep time" to the music. The failure of such people to march in step or to dance in time is simply an outward and visible sign of an inner and generalized failure of the organism. Nature has provided them with a defective musical instrument, and it gives coarse and faulty results.

HOW THE RHYTHM OF MUSIC IS ACTUALLY FELT

To make this discussion still more concrete and definite we may briefly summarize the experimental findings which go to show how individuals, including both the musically trained and untrained, actually sense and feel the rhythm of music.

1. Let us begin by listing the parts of the body in which the rhythmic pulse has most frequently and certainly been detected. The very longest and slowest rhythmic groupings are sensed in terms of the breathing, and the tension and relaxation of the diaphragm. Next come those slow and massive rhythms which we feel in the swing, incipient or actually carried out, of the body as a whole, from the heels, the knees,

or the hips. Faster rhythms, again, are felt in the feet and legs, though of course there is a pretty well-defined upper limit of speed here. The toes, again, provide a source of rhythmic grouping for faster and lighter rhythms, and many sense the beat of speedy concert waltzes here. The jaw, the lips, the tongue, and the larynx, again, are frequently used instrumentalities of rhythmic experience. Many a musician keeps time to music by incipient movements of the tongue, or by twitchings of the throat muscles.

2. Where what is technically known as the *Takt* or underlying bar-beat of music is at all prominent, we invariably find that musical people respond to it with well-marked motor reactions, which indubitably provide the basis of their rhythmic pleasure. Many effects in modern music depend ultimately upon this pronounced motor response to *Takt*. Conventionally, the bar-beat of music is something that flows on with great regularity. But some modern music introduces great irregularities here. For example, we have compositions in which alternative bars are written in six-four and seven-four, or four-four and five-four time. It would be quite untrue to say that such music is not rhythmic, for as we have seen, rhythm means grouping, not regularity. The peculiar disturbing effect of this irregularity is due to the fact that we are, as it were, forcibly and abruptly thrown to and fro between a set for four and a set for five beats.

Besides the *Takt* we find in music what we may call the *phrase rhythm*. Every melody is always subdivided into a number of component phrases; and each of these constitute a rhythmic unit. This larger or phrase rhythm is far less regular and far more flexible than the *Takt*, but is just as genuinely a rhythm for all that, and again is grasped in terms of muscular coördinations, without which it would not register. The rhythm of the phrase seems usually to be

sensed in terms of breathing, with the beginning of the inspiration corresponding with the opening of the phrase, and expiration corresponding with its end, or in terms of tensions and relaxations referred particularly to the diaphragm. It is highly likely that other factors enter in as well, but these have been experimentally identified.

This result is clearly of great interest in connection with teaching pupils to phrase properly. The teacher must bear in mind that a musical phrase is at root a kinæsthetic entity — that is, it is a unitary muscular coördination. Of course this can most readily be made clear to vocal students, who are taught to sing phrases on a single breath. This is an instance of psychologically correct musical pedagogy. *Mutatis mutandis*, phrasing ought to be taught in precisely this way to pupils of instrumental music.

3. When we come to the relations between the *Takt* and the phrase rhythms, we approach one of the most interesting and important matters in the whole psychology of music. Very little experimental work has been done here, however, and what little there is has not been published. So we must confine ourselves to generalizations.

The rhythmic interest of music depends very largely on the complex and changing relationships between the *Takt* and the phrasing. Simple songs, marches, and dances ordinarily show a very simple and obvious rhythmic pattern, with *Takt* and phrase corresponding. Syncopation is a device for enhancing rhythmic interest by directly reversing the relationship, so that melodic rhythm opposes the *Takt*. It is interesting to note that a syncopation continued too long without interruption comes to lose its character, the basic *Takt* rhythm being pulled over to correspond with the melodic flow. The reason is that a syncopation, where a primary rhythm opposes the secondary rhythm, depends on a very intricate muscular

coördination, one set of muscles beating the primary rhythm while another set beats the secondary rhythm, and there is a very strong tendency for the two coördinations to become synchronized. When this takes place, the syncopation effect vanishes. This must always be borne in mind by teachers in instructing their pupils in syncopated rhythms. Syncopation, however, is a crude device, and in modern music the relationships between *Takt* and melody are endlessly complex, shifting, and subtle. A point to remember, both in teaching and interpretation, is that the melodic rhythm should never be arbitrarily pulled round to fit into the *Takt*. The *Takt* is the basic rhythm, and about it the melody plays freely, now synchronizing with it, now departing from it.

RHYTHM AND TIME

In the older psychological studies it was taken almost as an axiom that the rhythmic sense depended on the sense of time — that is, that our feeling of rhythm was essentially connected with our feeling of duration. And musicians commonly link time and rhythm together on the assumption that they are almost identical. But one of the striking tendencies in more recent investigations of rhythm has been to show that the time sense and the rhythmic sense do not belong together in the way that used to be supposed.

While the relevant literature bearing on this point is large and technical, we may select one item that conclusively shows the independence of the sense of rhythm from that of time. Stetson and Tuthill, at Oberlin, studied the ability of a number of subjects all musically trained, and some very expert in ensemble playing (and so, presumably, with an unusually developed time sense), in making accurate rhythmic responses. The subjects were required to play two rhythms on a telegraph key, connected with a recording device which measured the

exact time of the reactions. The rhythms were respectively an iamb (a series of dotted eighth notes, each followed by a sixteenth note) and a triplet, executed at different metronome tempi. These skilled musicians used all possible care to make the rhythms accurate in time. And furthermore, they thought they had succeeded. But the records showed a surprising error, which always consisted in the prolongation of the accented beat beyond its legitimate duration.

Here we have a result which is exceedingly fundamental in our understanding of music and its pedagogy. Rhythmic satisfaction and correctness positively does not depend upon uniform accuracy of timing. Temporal distortions may, and in fact do, exist without in the slightest degree affecting the rhythmic flow, which depends not at all on the sense of time, but on muscular coördination. Every teacher and musician should grasp this point clearly.

This is so important that it seems well to reinforce it with some concrete illustrations. In accompanying congregational singing, almost every organist will pause at the end of the chief phrases, and particularly at the end of the lines. In this he follows the natural tendency of the congregation. Sometimes one comes across a precisian who insists on driving the hymn through exactly on the metronome beat. And the result always is a feeling of discomfort and difficulty, a sense of "something wrong." The reason is that each phrase or rhythmic entity is given out by a unitary muscular coördination, and time is needed to reset the muscles for the next effort. To drive through the phrases on the exact beat of the metronome is to violate rhythmic propriety for the sake of an element far less psychologically important — the time element. Again, in teaching children to sing, each phrase should be made a unit in and of itself. It is quite inadmissible to rush from phrase to phrase. Quite considerable pauses may be allowed,

and indeed should be. And finally, in dealing with instrumentalists, the teacher should definitely permit relaxation and re-orientation at the close of each phrase, even at the expense of accurate timing. Every first-rate artist actually does this, and so far from being wrong, it is one of the reasons why his playing sounds easy and excellent, for it is psychologically correct.

This does not, of course, mean that timing should be arbitrary, but only that the proper standard should be employed. And this is psychological, not chronological. Underlying the phrase rhythms is the *Takt* rhythm, which operates to hold together the entire movement. If pauses between phrases become too long and irregular, rhythmic impropriety occurs, because the *Takt* is violated. But the *Takt* itself is very flexible, and should be so handled as to permit the muscular freedom of coördination on which proper rhythm depends.

The metronome and the score can be very misleading in the matter of rhythm. Both strongly suggest that correct rhythm is of necessity uniformly timed. The superimposition of phrases and slurs on the score, however, more than suggests that in music we have something more basic than the objective time-relations between the notes.

RHYTHM AND TEMPO

Our discussion of rhythm enables us to give a very interesting and important, though certainly only partial, answer to the question: Why do we find the tempo at which a composition is played either too fast, too slow, or just right? In general the reason seems to be that we set ourselves to beat time to the music with one or other of the body pendulums whose action we have described. Now as we have seen, the length of the pendulum ultimately determines its natural rate of swinging. And if the composition is taken at a tempo which makes it

difficult or impossible to swing to it in the way we had sub-consciously planned, our motor reaction is disturbed, and our whole body registers disconcertment and dissatisfaction.

Reasons actually given in psychological investigations for saying that a composition seemed to go too fast are these: (1) The music proved to be too rapid for the particular kind of motor reaction which seemed most natural to the listener. This, of course, is a very precise illustration of our general statement. (2) The music was too fast to be danced. This is a more specific instance of the same idea. (3) The music seemed too fast for the players. Here, to be sure, we have a further complexity entering in, but our motor set in responding to music is undoubtedly very much influenced sympathetically by the attitude of the performer. If he seems to play easily and with control, we too are at ease, and tend to accept his tempo as well as other elements in his interpretation. If he gives a constant impression of strain, we too tend to be thrown into confusion.¹

In the same way we often speak of too slow a tempo as "dragging." And this is a literally correct psychological statement. When music is played too slowly, its beat drags upon our own motor reactions, and, as it were, acts as a brake upon them. Instead of yielding ourselves to it with ease and pleasure, we resist and fight it. We find ourselves trying all the while to speed it up to an acceptable rate of flow, and in consequence we are bereft of all enjoyment.

Of course, we do not go so far as to claim that our rhythmic responses are the sole factor in determining the proper tempo at which music is acceptable. The mood, the emotional tone, the "meaning" of the music, all enter in here. But it is astonishing how often we express the spirit or meaning of a

¹ These reasons are brought to light by Weld in his study "The Psychology of Musical Enjoyment," *American Journal of Psychology*, 1912, page 23.

piece of music in terms of movement and motor reaction. Weld, in the study just cited, found that when music is accompanied by imaginative pictures, these are never still pictures, but always contain motion — they are pictures of dancing, marching, leaping, posturing, and so on. And when we make the largely futile attempt to put into words the meaning of a musical composition, we find ourselves inevitably talking in terms of motion. The music rushes on or lingers, it soars and descends, it is a brisk march, or a fairy-like dance, it has a “linked sweetness, long drawn out,” or a ponderous swing. And so here again, we find that a basic element in our appreciation of it is the motor reaction it produces in us. And this, as we insist, is fundamental in determining its proper and acceptable tempo.

This is a point of great importance for teaching. If we want to train a pupil to take a composition at the proper tempo, it is not enough merely to say “you are playing this piece too fast or too slowly” as the case may be. The tempo the pupil selects after he is able to play or sing the notes easily, is the one which he *feels*; it is the expression of his own intimate attitude toward the music. And it is this whole intimate attitude or set which we must change. We must say to him in effect: “You have conceived this composition wrongly. It is not grandiose, but brisk and martial; or, it is not a ballroom waltz, but a fairy dance.” In other words, we must seek to modify the whole motor setting which is his background in all that he does, and in all the choices he makes in his interpretation.

Another point which this analysis of the relation between rhythm and tempo helps us to understand is the principle underlying tempo contrasts in music. Fairly fast playing, coming immediately after slow tempo, will actually seem very fast, and vice versa. And the reason is that the sudden tempo

change makes it necessary for us to reverse and reorganize our whole motor setting. We have, as it were, to tune in our bodies to the new tempo, so that it is not absolute speed, but relative speed that registers. This is often unrecognized, and inexperienced players will frequently tend to exaggerate tempo contrasts, so that, although the absolute speed as measured by the metronome may be correct enough, the rapid passages *sound* rushed and the slow passages *sound* dragged, and the artistic effect of the contrast is ruined. When a tempo contrast is so violent that we cannot readjust our motor attitude to it, it passes beyond the limits of rhythmic propriety which ultimately determine the speed at which music is acceptable.

To make this more concrete, a pupil is often allowed to play a sonata with the slow movements up to metronome speed, but with the faster (and more difficult) movements very much below it. Doubtless the most satisfactory result of all is to play the whole work up to proper absolute tempo. But the very worst thing possible is so to distort the tempo contrasts that sense of rhythmic continuity is lost, for this means that the artistic significance of the work is lost as well.

The expressive device of the *tempo rubato*, too, falls under the heading of tempo contrast to some extent. *Tempo rubato* is ill-named and ill-understood if it is taken to mean a mere arbitrary variation of speed. When it destroys our sense of rhythmic continuity, that is to say, when it is so extreme or abrupt or ill-managed that we fail to adjust our motor attitude and set to it, it is thoroughly bad. This, no doubt, is the essential psychological point of Chopin's remark that the tempo of the melody may vary, but never that of the accompaniment. Taken *au pied de la lettre*, of course this would involve an obvious absurdity. But in essence it means that in interpretation and appreciation the important thing is

the steady on-flow of the rhythm. It is this steady on-flow, arising from the continuity of motor attitude or set, that forms an indispensable element in musical enjoyment.

TRAINING THE RHYTHMIC SENSE

Let us begin by saying emphatically that no teacher need despair of the possibility of training the rhythmic sense. If we go about our business intelligently, the rhythmic ability of the pupil will certainly be improved by training and practice. Of course, it is from one point of view an inborn capacity in which people vary greatly. But within the wide limits set by nature it is quite possible to build up the pupil's power correctly to hear and play the rhythms of music. Music teachers who claim that rhythm is wholly innate and insusceptible of training contradict both science and experience. One cannot help wondering just what such teachers think they are doing when they work with a pupil — just what essential functions and abilities they imagine themselves to be improving.

To teach rhythm we simply apply to this special problem the general and well-established principles of all learning. First of all we must understand the precise nature of the skill that we wish to cultivate, and this has been the purpose of the foregoing psychological analysis. And then we must take measures to separate it out and build it up. And this, too, can be done.

1. The Jacques-Dalcroze system of Eurythmics is the best known scheme for isolating and training the sense of rhythm. It depends precisely on the point we have been making, namely, that our ability to deal with rhythm depends on muscular coördination. Under this system of training, students are taught to build up complex sets of coördinated movement, and to "realize" musical compositions. A piece of music properly "realized" by a Dalcroze pupil is an interesting object lesson

in the essentials of musical rhythm. The entire rhythmic pattern is visually presented in complex sets of movements, and we have, as it were, an objectification of the rhythmic structure of the work. The results of this kind of work are surprisingly good, and indeed constitute, by implication, a kind of reflection upon ordinary music pedagogy.

2. The teacher of public school music has many admirable opportunities for giving proper instruction in rhythm if she understands the fundamental principles of this side of her work. One serious criticism of some public school music work is that it undertakes to teach rhythm as being a compound of accent and duration. Both accent and duration, however, are secondary factors in musical rhythm, the primary point always being muscular coördination. Some concrete suggestions may serve to illustrate proper lines of procedure.

In the early grades, the coöperation of the whole class may often best be secured by stressing the rhythmic aspect of the song. Children who are too shy to sing with the group, or who are lacking in musical perception and control, and who would otherwise sit silent and gain nothing, may find it possible to mark the beat in various simple ways while others sing.

The question of accompanying songs with appropriate action is open to considerable debate. This is the practice under the Dalcroze system, but there conditions are specially favorable. In the ordinary classroom the gesture song readily degenerates into mere antics. One thing is certain, the song should not be dramatized for the purpose of teaching rhythm, for dramatic representation is entirely different from rhythmic action. Perhaps, all in all, the best type of action for the ordinary classroom is the marking of time with the finger against the musical score, as described and used by Giddings.¹

¹ Giddings, T. P., *Grade School Music Teaching*, Congdon.

But the essence of rhythmic instruction in school is always to secure rhythmic coördination with the phrases, superimposed on the basic *Takt*. Instruction in proper breathing, so that the phrase is always sung on one breath, is the best kind of teaching of rhythm, and it carries very far. The general point is to lead the children, so far as conditions allow, to sense the structure of the song in terms of muscular coördination.

3. In studio teaching, the following points should be taken into consideration for instruction in rhythm.

A. One factor in selecting compositions for pupils should be their rhythmic character. A composition may have a rhythm so subtle and complex that it is unsuitable for young or undeveloped pupils. For if they cannot grasp the rhythm, they cannot grasp the composition at all.

B. The rhythmic pattern of the composition should be made clear to the pupil before he begins intensive practice. Here and elsewhere the author strongly advocates playing the piece or singing the song to the pupil as a preliminary to learning it. The point that is of interest to us here is that this should be done till he catches the sound and structure of the rhythm which is the skeleton of the music.

C. In order to establish the underlying *Takt*, and to keep everything steady and shapely, no device excels counting aloud as the pupil plays. Every pupil should be required to do this. We have said that the *Takt* is flexible, and not only may, but must, vary under the compulsion of the superimposed phrase rhythms. But such variation must never be arbitrary. The pupil may displace the beat as much as he likes or needs, *but he must never lose it*. Once he ceases to know where the *Takt* comes in, the rhythmic structure crumbles, and his playing descends toward musical gibberish. It may be noted that counting is better than the systematic use of the metronome, though this can be used for setting tempi, etc.

D. The phrase rhythms or slurrings can be taught in two ways. It is often good practice to let the pupils sing the melody, using the words of the count as his song, and taking each phrase on a breath. To the instrumental pupil who has no vocal experience this will often be very valuable in revealing the structure of the phrase rhythm. The other procedure, which should always be followed, is to see that each phrase is executed by means of a unitary muscular coördination, which is, as it were, switched off at the close of the phrase. This we shall find all-important in developing an intelligible executant technique.

RHYTHM AND TECHNIQUE

While we shall have to discuss the relationship between rhythm and technique much more fully later on, a word here may make the bearings of the present chapter somewhat clearer. Rhythmic playing is, primarily, muscularly intelligible playing — that is, playing in which the whole body responds freely and easily to the complex pattern of *Takt* and phrase. Playing of this kind is the sort that *sounds* intelligible and “musical,” because it brings out the skeletal structure of the music and conforms to it. And it is the sort of playing where difficulties are minimized, and all the coördinations work with maximum ease. Indeed, it is not too much to say that every first-rate executant musical technique is ultimately based on rhythm.

SUMMARY OF CHAPTERS II AND III

The general purport of Chapters II and III is that musical ability involves skills in hearing, and fine sensitivity to rhythm. When we actually listen to music, both auditory and muscular-motor elements are experienced. For instance, a melody is simply a series of notes, following one another at certain intervals, from one point of view. But besides this, the

melody involves rhythmic elements — those of *Takt* and phrase. Unless we are sensitive to both the rhythmic and auditory elements it is clear that our melodic experience is defective. So it is not quite accurate to talk about hearing music, for we feel it in our muscles as well as listen to it with our ears.

On this basis of musical apprehension, involving both auditory and muscular elements, depend the two higher qualities of the musical mind which we now consider — musical intelligence and musical feeling.

CHAPTER IV

MUSICAL INTELLIGENCE

In approaching this topic, no distinction is of more crucial practical importance than that between intelligence about music and musical intelligence. A person may have the former and be utterly destitute of the latter. The situation is precisely the same as that of a student of ethics who has a profound knowledge of the sources and nature of obligation and the history and development of moral standards but whose own personal conduct is not intelligently ethical at all.

A great deal of conservatory and university training is really aimed at intelligence about music rather than at musical intelligence itself. This, perhaps, is particularly true of the course leading to the degree in Arts with a major in music. Here the emphasis is likely to be upon what is known as "theoretical music," though some "practical music" is usually required. Much attention is paid to the history of music, which, of course, is a vast field of scholarship and can be cultivated for its own sake. Formal harmony, counterpoint, orchestration, and the study of musical form are also prominent in the requirements. Each of these subjects can be made a very difficult and technical study, and they are an ideal type of content for those who believe that education should aim at "training the mind" irrespective of the practical or "use" value of the subjects studied. The extreme instances of this tendency are to be found in some European universities, where a man may go as far as the doctorate in music, and be able to

write a formally correct symphony for the full orchestra, but not have the power to play a simple instrumental composition or to sing.

We wish to express no opinion as to the value of this kind of education. But it is necessary to insist that we must not deceive ourselves about it. Properly speaking, it does not deserve to be called musical education at all; for it simply does not issue in musicianship, the only criterion of which is the power to produce musical results. Also we should be very much on our guard about the distinction between applied and theoretical music. All musical training, if it is such in reality as well as in name, must aim at building the ability to produce music or to enter into and appreciate music. And whether this power issues in the direction of manual or vocal dexterity, of the creation of music by way of composition, or of the ability to take the attitude of what has well been called creative listening, is of entirely minor importance.

Musical intelligence as such means intelligence that operates in terms of the musical medium itself. It is the ability to grasp and respond to the relationships within music, to comprehend the intent and meaning of compositions. This, surely, is the only reasonable and sane goal of a course of training that can in any correct sense be called musical. And, to repeat, it is an entirely different thing from even the most expert, technical, and scholarly knowledge about music.

THE INTELLECTUAL ELEMENT IN MUSIC

The fact that every musical composition necessarily involves an intellectual element is so familiar that the point need not be labored. A composition is very far from being a haphazard, arbitrary hodge-podge of tunes, harmonies, and rhythms. It is an ordered whole. Its smallest details exemplify fixed principles, and it is worked out according to a definite plan.

And unless we are trained to grasp these factors of intellectual meaning, we do not possess musicianly skill, for we simply fail to hear it as it is.

We may single out three chief structural or intellectual features of musical compositions, which the musician must be able to grasp. (1) A musical composition, first of all, has a melodic structure, which may be very simple, as with a folk-song, or very complex, as with a fugue, where several simultaneous melodies are involved. (2) A musical composition has a harmonic structure — that is, it involves a series of harmonic progressions. (3) A musical composition has a plan, according to which the various melodic and harmonic ideas are worked out. Musical intelligence is the power directly to apprehend and appreciate these constituent elements in music.

Perhaps the significance of the intellectual element in music in general, and also in musical training, may be made still clearer by saying that our appreciation, rendition, and composition of music may be either right or wrong, either correct or incorrect. The inexpert listener, for instance, may have no apprehension at all of the general plan of the composition he hears. The fact that the composer is developing a melodic idea by a series of variations may entirely escape his notice, and this means that his listening is not musicianly, because it is not musically intelligent. Again, the performer of music may be wrong — and by this we do not merely or chiefly mean that he may play “wrong notes.” He may fail to bring out the essential melodic line; he may smudge the detail of the harmonic progressions; or he may fail to make clear the balance of the general plan. And here again we have a failure of musical intelligence. And in composing music, it is notoriously easy to make mistakes. One may write an impossible harmonic sequence, or an unplayable and unassimilable melody, or call for an orchestral effect that is mere barbarous noise, or

lay out a plan that utterly fails to do justice to the melodic ideas involved. In all these respects it is very clear that an act of intelligence is involved, and that effective musicianship depends upon trained intelligence.

Music, then, depends on fixed principles, which are partly conventional but by no means wholly so. And musical intelligence which is a major outcome of musical training consists in the power to recognize and apply these principles in the medium of music itself, rather than merely in a knowledge of what they are and how they have come to be.

PSYCHOLOGICAL BASIS OF MUSICAL INTELLIGENCE

✓ We find the psychological basis of musical intelligence in what we have called "ear-mindedness." This is a complex of auditory and muscular functions, which we have analyzed in some detail. And it is the apprehension of the melodic and harmonic structure of a composition, and of its general plan, in and through this medium, that we call musical intelligence.

In trying to make clear the psychology of musical intelligence, we must point out a peculiar, and indeed puzzling duality in the nature of intelligence as such. Indeed it is hardly too much to say that the term is used in two different senses.

1. First of all, we have what may be called the intellectualistic conception of intelligence. In this sense it is roughly equivalent to the ability to think out problems and to use abstract concepts. Intelligence so defined operates largely in terms of symbols. We find it exemplified in legal discussions, where the meaning of technical terms and the precise definition of ideas are at issue. We find it, too, in mathematics, where problems of great complexity are dealt with by means of a refined and powerful set of symbols. Now while we have spoken of the intellectual element in music,

musical intelligence proper does not have the above characteristics at all. It deals not in the abstract but in the concrete, not with the names of sounds and relations between sounds but with the sounds and their relationships direct. It is, of course, quite possible to teach harmony, counterpoint, and form just as we might teach algebra. And in that case we are dealing with the intellectualistic type of intelligence. Then we are not teaching music itself, but rather knowledge about, and symbols for, music. A student of this kind of harmony or counterpoint actually works in terms of abstract symbols rather than of music proper.

2. Second, we have the kind of intelligence that consists in the ability to deal with relationships directly and with concrete entities in relationships. Its nature can perhaps best be made clear by some examples. Galsworthy has stated that when he works out the plot of a novel, he does not think it out carefully beforehand, but plunges in, not knowing where he is coming out, and as he proceeds, everything arranges itself and an intelligible structure builds itself up. Paul Morphy used to insist that he never attempted to look ahead in playing chess, but that he had an immediate sense of the correct move in any situation, which actually led to the development of a strong and logical game. A painter does not plan his color scheme by consciously recalling the laws of color harmony and contrast. He lays on his colors guided by an immediate feeling of what is correct and what is not, and if he has to experiment, he does not resort to the abstract principles of science, but still is guided by his feeling.

Now the real mystery here exemplified is that such workers are not conscious of following out any explicit plan; and yet, when their work is done, lo, a plan exists in it. If each detailed decision had been made in the light of the most perfect knowledge of the abstract scientific principles involved, it could hardly

have been bettered. And yet each such decision seems, when made, nothing but the whim of a moment. They choose on a basis of immediate preference, and their choices turn out to be logically and eternally correct. It is undeniable that they are dealing with relationships, just as truly as is the abstract mathematician. But they deal with them in the concrete, not the abstract. Their feeling for the logic of their general plan is not abstract, but concrete, and in terms of feeling and perception. And what we are describing as musical intelligence deals with the relationships and structure of the composition on this concrete and perceptual level.

It must be confessed that psychology is rather helpless in the face of this most impressive phenomenon of concrete intelligence. Just what happens in the mind of the worker as a fiction plot takes form bit by bit, as a chess attack falls into order and develops itself detail by detail, or as the color scheme of a picture reveals itself on the canvas we do not know. But with music, the investigations give us at least a clue. We know that sound has a peculiar power over the organism, causing resonances, tensions, and muscular and motor attitudes. And this suggests that our musical apprehension of structure depends on our motor set. When a composition begins, we do not consciously say, "This is a waltz, a march, a song-form, or a fugue or a sonata;" but we are instantly thrown into a certain attitude of expectation and anticipation, so that what follows in the way of sound seems congruous or incongruous, right or wrong. When we hear a discord, we do not say "that is the dominant seventh, and ought to move toward the tonic;" but the sound at once focuses us in an attitude of expectation that only the sound of the tonic can relieve. And when a melody begins, the same kind of set or tension arises, only to be released by its close. These motor attitudes, which are, of course, acquired by training, and are

true acts of skill, seem to be the psychic mechanism by which we directly sense the ordered logical structure of music.

So to repeat once more, musical intelligence means the grasp of musical material in terms of its sound and feel. It is ear-mindedness applied to the structure of music. And, as we have seen, the development of ear-mindedness is, on the one hand, a growth of auditory and, on the other, of rhythmic skill and sensitivity.

OUR APPREHENSION OF THE MELODIC STRUCTURE OF MUSIC

In Chapters II and III we have pointed out the mental functions on which the power to hear and recognize melody depends. On the purely auditory side we found that it was based on the interval sense, for without this no melodic apprehension would be possible. And this in turn depends on the grasp of tonal background and environment. The motor element in melodic perception, on the other hand, is the sense of the larger, or phrase-rhythm of music. Our sense of *Takt*, of course, enters in here, but does not seem absolutely essential; for if, as is often done in jazz, we play a common time melody in waltz time, we feel it as the same melody, but distorted. Our purpose now is to understand the apprehension of melody as a unified, unique, and essential act of musical intelligence, which the musician can perform, and to which the music pupil must be trained.

A melody is a unity, made up of a series of intervals held together and given individuality by their constituting a rhythmic entity. Experimental studies on the subject bring to light the fact that it is unified and made an individual entity by our motor attitude or set. To quote the Aristotelian dictum, it has a beginning, a middle, and an end. The beginning of a melody throws us into a certain very definite attitude, which in turn issues in expectation, which is progressively heightened

and realized. We have the sense of pressing forward toward a conclusion which cannot be definitely predicted, but which is felt as implicit in all that is going on. If, on the one hand, notes and sequences are introduced which flagrantly violate our expectations and break up the set which we have formed, we feel them as incongruous, and say that the melody is *outré*, unintelligible, and meaningless, or wandering. If, on the other hand, the coming sequences are too obviously implied in what is going on, the melody seems banal and commonplace, and it ceases to hold our interest because expectation is satisfied too soon. And with the final note, or the final two or three notes of the melody, our expectations are fulfilled, and what was previously implicit is made satisfyingly explicit.

These phenomena of expectation and satisfaction always seem to depend upon motor tension and relaxation. In most cases, as we have seen, they can be correlated with the breathing rate. We hold our breath until the series of notes, moving upon its close, relieves the tension of our bodies, and then we relax with a faint, involuntary sigh.

The nature of the melody experience has been most eloquently expressed by Gurney, whose description is in the fullest accord with the experimental findings on which our own position is based. "The melody may begin by pressing its way through a sweetly yielding resistance to a gradually foreseen climax; whence again fresh expectation is bred, perhaps for another excursion, as it were, round the same center but with a bolder and freer sweep, . . . to a point where again the motive is suspended on another temporary goal; till after a certain number of such involutions and evolutions and of delicately poised leanings and reluctances and yieldings, the forces so accurately measured just suffice to bring it

¹ Gurney, Edmund, *The Power of Sound*, John Murray and Co., London, page 165.

home, and the sense of potential and coming integration which has underlain all our provisional adjustments of expectation is triumphantly justified."

This account of the psychology of melody gives us an insight into the means and aims of training for melodic grasp.

1. Evidently the problem of teaching the music pupil to deal adequately with melodic elements is more than one of hearing alone, and far more than one of technique alone. Primarily it is one of musical intelligence. The first necessity is to lead the pupil to understand the melody as a significant unit. The power of auditory discrimination, of course, is necessary, but we do not find the *essential* element here. The pupil must be led to work to hear the melody *as a significant and connected unit*. How can this best be done?

Singing is by far the most favorable medium for training in melodic grasp, and it is here that the public school music teacher has an admirable opportunity for a piece of genuine musical education. The teaching of rote songs to kindergarten and first-grade children should be organized with this in mind. In teaching children a melody it is far better to have them apprehend it *as a whole* than have them begin by trying to copy note by note what the teacher sings to them. The smallest unit should be the phrase, and, where possible, groups or phrases should be presented. Wrong notes are better corrected after a start has been made than avoided from the beginning by a slavish note imitation. The reason is that then the false notes are apprehended as such in their context, and the corrections are seen to be necessary for the effect and significance of the whole. It is important, too, that devices be used for explaining to the children the spirit and intent of the melody. The best of these is an appropriate union of notes and words. The children should have songs describing the falling of leaves, the soaring of birds, the rising of the sun, the

swaying of trees, the rocking of boats, the moods of joy and sorrow, and words and melodic direction should be unified. In this way they are made conscious of melodic direction and unity as something significant, something to be apprehended, and soon it can be studied for its own sake alone. Here we have one of the many reasons why the music should not be taught to children separately from the words, at least in the first stages of teaching new songs.

The problem of the studio teacher, either of vocal or instrumental music, is, of course, somewhat different, for he is not dealing with such simple musical material, or with such young beginners. But he should always seek to build up melodic apprehension. This is often conspicuously lacking in piano pupils who have no vocal background; for their instrument lends itself more readily to a vertical than a horizontal treatment of music. Piano pupils should be required to play the melodies in isolation from the accompaniment, and to play them thoughtfully and deliberately, so that they sound like music, not like mere notes. The melody should be tried at different tempi and with varying dynamics. The pupil should be told to pay special attention to its curve, and its movement toward its point of final rest. The device of singing the melody, of course, is always excellent. But whatever the means, the aim always is to be sure that the pupil apprehends the melodic content of the music he is learning. In this way, an immense amount of bad and unintelligent playing can be avoided, and progress can be made in genuine musicianship.

2. The interpretation of a melody depends on precisely the same psychological factors that operate in our apprehension of it. We so adjust ourselves that we grasp it as a unit having significance, and all the details of our treatment of it depend upon this intelligent apprehension. So in the treatment of melodies by performers, the first need is to bring out the mean-

ing and intent of the theme. It is possible to play or sing a beautiful melody so crudely that it sounds either perfectly banal and puerile, or else like sheer musical nonsense. On the other hand, it is possible to treat a difficult or even a defective melody in such a way as to bring all its details into a harmonious relationship, and to make it full of musical significance. On the one hand, legitimate expectations are violated and disappointed, and we catch no meaning in the music. On the other, they are realized, and the music sounds intelligible and beautiful. It has been said that the power of thematic invention is one of the supreme manifestations of genius in a composer. It is also true that the power of thematic interpretation and correct melodic outlining is one of the certain signs of musicianship in an artist. Both the apprehension and treatment of melody are acts of musical intelligence.

The means by which the teacher can lead pupils to be kind to the melodies — to avoid thumping and yelling, and false accentuation and phrasing — are practically the same as those by which the power of melodic apprehension is built up. Indeed, in teaching proper melodic treatment, one is also teaching melodic apprehension, because the psychic mechanisms employed are the same.

This last point is of peculiar importance for all teachers of music. One can tell, simply by listening to the singing of a class or the playing of a pupil, whether the teacher is really building up a musicianly and intelligent grasp of melodic meaning, or merely teaching the song or piece as a rote procedure. In the one case, the melody sounds expressive, meaningful, shaded. In the other it sounds bald and relatively nonsensical.

Teachers ought always to stress and employ the four chief devices — dynamics, tempo, shading, and timbre — in seeking to teach melodic apprehension. The great point is that the

children should learn never to use these devices arbitrarily, but always as contributive to musical meaning which is to be rendered intelligible. To begin with dynamics, children should learn to recognize that a melody may sound meaningless when yelled or banged, but assume deep beauty when softly sung or played. Again, musical gabbling or dragging can readily destroy musical significance, and this too the pupils should comprehend. We have seen that tempo control, particularly with young children, should be indirect. That is, they should be taught tempo choices as expressions of the rhythmic spirit and meaning of the music. It is always better in principle for the teacher to say "this is a lively song," and then set a rapid tempo, than to say "we will sing this song fast." And with instrumental pupils, too, the same idea holds true. In other words, the pupil should always recognize that tempo is an expression of meaning. Dynamic shadings, again, are a most important device for rendering the melodic outline intelligible. By emphasizing the wrong notes, by coming out too strongly with the cadences, or by singing or playing on a monotonous dynamic level, the significance of the melody may be almost entirely dissipated. A very excellent test of the teacher's power of instructing pupils in melodic apprehension is simply the degree to which they naturally and spontaneously shade their melodies to bring out the true meaning, and to which they emphasize the just curve. Lastly, to mention proper tone, we must repeat that with young vocal pupils, good tone should mean *appropriate* tone — *i.e.* tone that expresses the idea embodied at once in words and music.

It may seem strange to many teachers to say that the pupil ought to be definitely instructed in the use of these expressive devices whose proper employment is often supposed to be a mysterious and incommunicable gift of providence. This is one of the persistent fallacies of the studios with which the

public schools can have nothing to do. Once we admit that melodic apprehension is an act of intelligence, it follows that melodic treatment — the exteriorization of melodic apprehension — is also an act of intelligence and that it can be taught. And in teaching melodic treatment the teacher may feel confident that she is also building up melodic grasp.

OUR APPREHENSION OF THE HARMONIC STRUCTURE OF MUSIC

We have seen that the sensory basis of our apprehension of harmony in music is the perception of dissonance and consonance, which seems to depend ultimately upon the fineness of our innate ability to hear. From this there is built up, by experience and training, the power to recognize and identify the various chord combinations. But harmonic apprehension proper, as it actually functions in musicianship, involves something more complex than the power to recognize chords clearly and distinctly, though of course without this it would be impossible. For harmony involves movement from one chord to another. It involves, so to speak, a sense of direction in harmonic material. The general psychological principle which determines harmonic movement, and which makes a sequence of chords satisfying, seems to be that we tend to move from dissonance to consonance. One side of the history of music, from Bach to the moderns, comes to this — it is the discovery of how to use more and more extreme dissonances. There was a day when an audience of sophisticated musical amateurs received a Beethoven symphony with laughter, in which the orchestra itself joined. But now the harmony of Beethoven seems very simple and almost obvious, and its complexity is as nothing in comparison, say, with a sonata by Scriabin. Obviously the more extreme the dissonances we can use effectively, the more musical effects we

can produce, for it amounts to increasing our musical vocabulary. And the use of the higher dissonances makes possible a subtler, richer, and more protracted harmonic movement. Instead of being limited to simple transitions from dominant dissonance to tonic consonance, we have at our disposal innumerable degrees of greater and lesser dissonance, and can produce endless delicate effects, all within the compass of our psychological canon of movement in the direction of greater consonance.

It is this rule of movement toward consonance that determines our motor attitudes of expectation-tension and satisfaction-relaxation in the presence of harmonic material. For it seems probable that the demand for consonance is partly auditory and partly organic and motor. Our ability to respond correctly to a harmonic progression depends first on our power to hear the consonances and dissonances and, second, on our skill in reacting to them with the proper sequence of tensions and relaxations. The reason why ultramodern harmonies sound meaningless to so many people is not that they are unable to hear them correctly, but that the unfamiliar complexities of the movement throw them into a state of hopeless confusion. Instead of relaxation succeeding tension, satisfaction succeeding expectation in a logical and orderly sequence which in turn would make the progressions themselves seem orderly, the unskilled listener is merely thrown into a general and unrelieved tension of worry and confused dislike. Once more then, in our analysis of musical intelligence, we come upon a motor set which is an act of trained skill, functioning to enable us directly to apprehend the structure and logic of the music. And here as always, our two principles of learning find application. We must practice the proper attitude, and we must learn to like it and dislike its opposite.

1. In the pedagogy of harmonic structure, the first proper step is ample directed experience with harmonic movement. This can be given in the later grades in public school music, when part singing is first introduced. Or it can be worked out under the auspices of the studio teacher. In any case, it is a very important element in musical education and should by no means be neglected. Part singing affords very fine opportunities for the study of harmonic movement, for the pupils learn naturally to differentiate the various elements in chords, to notice that one or two notes are held stationary while others move, and so on. With the ordinary instrumental pupil, this kind of training is postponed until formal harmony is taken up, and then it is presented, not in terms of sound, but in terms of the abstract symbols of the musical score. Pupils so taught tend to learn the formulæ rather than the living essence of harmonic movement. The proper teaching of harmony should depend always upon a wealth of previous experience carefully organized and directed.

2. Turning now to formal harmony, we find the psychological principles we have laid down exemplified in its laws. Every canon of harmony should be presented and understood as a particular instance or special treatment of the movement through dissonance to consonance, and from tension-expectation to relaxation-satisfaction. In this way exercises in harmony become something far more than drills on formulæ. They become means of practicing the attitude or set in terms of which we apprehend harmonic sequences as meaningful. And the rules should never be taught in the abstract. Pains should always be taken to have the pupil enjoy their proper application, and dislike their violation.

3. In connection with conservatory training, it is sometimes asked whether students whose major interest is in performance should be required to take much "theoretical

music." Unfortunately we must admit that harmony, counterpoint, form, and orchestration, taught in the conventional way, have very little value in making good pianists, violinists, and vocalists, or even good organists. But the proper measures to take are not in the way of eliminating the load of theory, but to make the teaching of harmony and counterpoint so sound pedagogically that they actually function in building the kind of living, intelligent musicianship which every executant artist ought to possess. From the very start in the third or fourth grade, harmonic sequence needs to be taught in the concrete, and in the higher ranges of musical education, this principle remains unchanged, though the details of its application differ. Harmony properly taught, and closely wedded to executant musicianship, results in raised levels of musical intelligence, which operate equally in the fields of performance and composition.

4. A last point is that harmony should be taught in its connection with melody, for the meaning of our music depends on this unity, and our sets for harmony and melody are very similar. The pupil should feel the harmony rising on its bass as the ideally correct comment or exposition of the melody. This again makes for intelligent performance. The pupil should see the relationship between melody and harmony, as it works itself out through such complicating devices as passing notes, etc. On this immediate, intelligent, and correct recognition of the relation of the melody to the harmonic movement depends the performer's phrasing — that is, his marking of endings and beginnings in the musical structure — and his emphasis — his choice of what melodic elements to bring out and which to relegate relatively to the background. This deliberate, careful analysis of melodic and harmonic relationships is something that is not enough encouraged in the teaching of music. It explains the extreme carelessness that

many pupils show in playing inner parts and basses. They hear the melodic line somewhat easily, and so they tend to play it correctly, but the harmony seems to them secondary, and it is smudged and played wrongly. Here, as everywhere, correct performance depends primarily on correct and intelligent hearing of music.

OUR APPREHENSION OF THE PLAN OF MUSIC

It is impossible to hear, to play, or to write music correctly unless we have an insight into its plan. And here we come upon the third great function of musical intelligence. Its importance can best be seen in analyzing the experience of the listener and the performer. The average good listener is probably sensitive to melody and harmony, but not specially sensitive to the larger plan in terms of which the thematic ideas are worked out. Of course, if such a plan is extremely simple and obvious, as with the Schubert-Taussig "*Marche Militaire*," which is nothing but a series of variations that are almost repetitions, with a simple second subject interpolated, it can hardly escape him. The simple A-B-A form, too, he can usually grasp. But he will often fail to recognize even an air with variations as such, unless it is explicitly announced. And the working out of a fugue or a sonata form is apt to be entirely beyond him. Such a person gets some real enjoyment from music. But much that the composer has to say escapes him, like speech in an imperfectly known language. And necessarily he misses the full beauty of the ideas.

The performer's case is more urgent. Yet even here the pupil is often allowed to wander stupidly through the traditional compositions without the least knowing with what structural elements he is dealing. Performance like this cannot but be unintelligent and unmusical, however technically refined.

Now it may be thought that our grasp of the larger plan of music must be mainly abstract and in terms of rules and formulæ, *e.g.* that we grasp a sonata in terms of the labels, "first subject," "second subject," "free fantasy," and so on, applied to its different members as it is played or heard. This is absolutely contrary to the experience of the greatest musicians. The child concretely and directly apprehends as a unit a simple melody that he can sing, whistle, or hum. He does not say to himself "here is a melody with a beginning, middle, and end;" his grasp of it is quite direct and immediate. And the only difference between the child's grasp of the melody "Fly, Birdie, Fly" and Beethoven's grasp of the "Ninth Symphony" is in the span of musical intelligence. It should be most emphatically insisted upon that we do not have concrete intelligence in the one case, and abstract intelligence on the other. This point is central for the whole pedagogy of musical form. For when we begin to train the child in simple, direct, concrete melodic apprehension, we are exercising him on the simplest musical form, and starting him on the direct road to apprehending in the same concrete, pleasurable manner the most subtle, complex, and pretentious musical structures.

So here again, in the most conscious and deliberate planfulness displayed in music, we come in contact with the concrete intelligence, the immediate perception of relationships. This is no doubt that the average composer writes a composition just as Galsworthy writes a plot. He does not lay it out in a formal schedule, but feels his way to conclusions through a series of complexities whose relationships are sensed rather than explicitly apprehended. Our actual apprehension of the plan of music — our sense of a composition as developing in some definite direction — is probably carried by some tension-relaxation, expectation-satisfaction mechanism in the muscular system. (On this problem no experimental work has ever

been done.) And it is this mental setting of expecting a certain *dénouement* that we train when we train the sense of form. No doubt the abstract analysis of compositions may help a great deal in the later stages of training. But it is absolutely essential to begin with concrete musical reality, and give practice, not in merely assigning formal names to different members of the composition but in actually practicing the mental-motor set in terms of which we grasp the concrete reality of the composition. To begin work in this direction, to train the pupil to recognize immediately and directly that music is structural and to be responded to *qua* structure, is one of the foundation values to be gained in public school singing, with its fine opportunities for melodic drill.

In the business of training pupils in this most important power of direct apprehension of musical structure we recognize two great stages. There is first of all the stage where we work wholly in terms of direct experience rather than abstract analysis. Then later there is the stage where rules and formulæ are introduced to organize and clarify the experience already gained. The important point here is that for sound pedagogy the first stage *must* be covered.

1. Beginning pupils should be given direct guided experience of musical form. The simplest of all compositions are those which consist of a single melody. These we find employed in public school singing in the grades; and there is a mass of them, varying widely in value, in the literature of instrumental music. If we use the procedures for teaching melodic contour already discussed, we shall have done all that is necessary to give the pupil a grasp of this simplest of musical forms. And we will have laid the foundation for advance work.

The next stage is the introduction of compositions involving two melodies. It will be easier to find good examples in

instrumental than in vocal music — at least good examples suitable for young children. A comprehension of this structure, consisting merely of a cyclic arrangement of the melodies, arises very readily once the pupil has been trained to grasp the single melody. At this stage it is still possible to find plenty of material elementary enough for young children to sing or play, and so direct executant experience with the form is available.

From this we pass on to the third stage, when the more complex forms are introduced. This, of course, implies instrumental music, and as by no means all pupils take enough of this to be able to study the great cyclic forms and polyphonic music, training in apprehension of them must be carried on largely by the agency of appreciation. This, on the whole, can well be held over into junior high school. A word, however, should be said to studio teachers who are beginning to introduce pupils to the more complex forms. In the first place, the pupil should be sufficiently disciplined in the simpler form so that his apprehension of more complex compositions arises on an assured foundation. In the second place, fugues, sonatas, and so forth should never be assigned without careful explanation and sufficient analysis, so that the pupil gains an appreciative interest in their construction, which serves as a guide to his playing.

2. This last point, indeed, has led us to the second chief division in the teaching of structure — that is, formal analysis. We must insist that the technical terms and notions here introduced must always be made to function in terms of actual concrete musical experience. Formal analysis that does not serve to make people more intelligent listeners, performers, or composers, is an entirely worthless element as far as musical education is concerned.

MUSICAL MEMORY

Scientific psychology recognizes a basic distinction between two kinds of memory. First of all we have what is known as rote memory. This is the memorizing of meaningless material, such as an arbitrary series of numbers or nonsense syllables. The only way we can fix such material in our minds is by the brute force of constant repetition. Secondly, we have the memorizing of meaningful material, such as a poem or a piece of prose. In this case our efforts are aided and directed by our comprehension of the sense of what we are trying to remember. It is clear that musical memory belongs to the latter classification. For we have seen that a musical composition is essentially a meaningful structure of sounds and rhythms which requires to be understood, and is built up by an act of intelligence. So musical memory is in essence one aspect of musical intelligence. In order efficiently to memorize a composition, the proper method is not to repeat it again and again, but to analyze and understand it first of all.

Experimental work on musical memory as such is disappointingly meager, but taken in conjunction with what we know about the psychology of learning there emerge certain points which are definitely established, and of high practical interest and value.

1. A composition should not be memorized note by note, at least in the first instance. The first effort should always be to block it into the mind by significant units. Other things being equal, the larger the units that can be absorbed, the more efficient the process of memorizing will be, both as regards rapidity and permanence. After the significant units have been learned in this way, the process can be carried down into detail as far as may be necessary, until perhaps at last each note of each chord is given individual attention and stored away.

This movement from the whole to the part, from the significant unit to its components, is a universal characteristic of the most efficient memorizing of all kinds of sense material. (Here we have one reason why the analysis of compositions is of value to the working musician.

2. The primary medium of musical memory is sound and auditory imagery. To put the same thing in non-technical language, we should learn a composition first of all by ear. It is entirely wrong to suppose, for instance, that we should try to learn the notes of a piece of music by their names, or the key transitions primarily by their symbols. The point is that memory of this sort would fail to function either in recognition or in actual performance. Learning a piece by its sound may be supplemented and supported by learning the names and symbols of its notes and segments, but this is secondary, though often quite important. Actual musical memories are really functioning sound-pictures of musical works. One investigator found that advanced students remember compositions most certainly and permanently if they study them first of all away from the instrument, using mere musical imagery and building auditory pictures of how the music would sound before it was played. Such a practice is perhaps not feasible in most studios, but it points in the proper direction.

It must not be supposed, however, that when we speak of learning "by ear" we have in mind anything slipshod or slovenly. The sound-effect of every detail of the structure — melodic outline, harmonic movement, and general plan — must receive concentrated attention, before the composition is properly learned. With homophonic music this may be comparatively simple. But with polyphonic music, such as that of the piano, the structure is so complex that to grasp it in its unity and detail is no mean feat. The musician cannot

be content with any haphazard, general idea of how the composition ought to sound. He must build up a clear and precise imagery of each melodic and harmonic detail, and of each structural unit. Until this has been done, the work is not efficiently memorized.

3. Musical memory subserves two purposes in actual musical experience.

A. First of all, it is necessary for the apprehension of the structure, unity, and meaning of the composition. Here we have memory functioning as recognition. An air with variations is obviously meaningless unless we retain some memory-traces of the theme. A sonata ceases to be a structure and becomes for us a mere arbitrary sequence unless we remember its first and second subjects. And the more clearly and definitely we are able to remember what has gone before, the better we shall be able to understand and the more deeply we shall be able to appreciate the composition in its entirety. Such a performance as Mozart's writing out the entire "Sistine Mass" after two hearings, or Mendelssohn's extemporizing a fantasy on all the themes of a new opera after a single hearing, is a supreme act of musical intelligence, not a mere stunt of rote memory.

B. Second, we have reproductive memory, exemplified in the performance of music without the score. The psychological basis of this process is precisely as we have stated it above. That is to say, the first requisite is musical imagery, *i.e.* a learning "by ear" of all the detail. But secondary factors here assume a very large importance indeed. In order to be safe, the musician has to provide himself with numerous cues. The performance of music — particularly on the concert platform — always involves considerable strain and distraction. Accidents may happen; the acoustics of the building may be strange; the instrument may be unfamiliar;

the audience may be restless. Any of these factors and many more may distract the musician's highly concentrated attention; his inward, mental grasp of the unity of the sound-structure may falter for a moment, and he may forget. Of course, if he is experienced, he can usually save himself without many of his audience being any the wiser, but he naturally wishes to avoid such hair-whitening experiences. How can he do this? The answer has already been suggested. He must support his mental grasp of the sound-structure by cues of various kinds.

First in value and reliability come the symbolic cues. He must know actually on what notes certain units of the composition begin and end, actually through what chords the harmony moves, and actually what key transitions are involved. This gives him certain fixed points of reference which he can pick up as he moves along, certain life-lines to which he can cling if all else fails. How many of such cues he will need — how frequently they must be spaced throughout the work — depends primarily on the nature of the music, a very complex, fluctuating structure naturally calling for more than one that is simple, and secondarily on himself, and his own capacity for ignoring small accidents and preserving his concentration intact. But in any case, it is the part of caution to have too many rather than too few.

Next in order comes the cue from visual imagery — that is, the actual visualization of certain parts of the musical score. Cues of this kind function in the manner described above, but cannot be used by everybody. Another type of visual cue is the visualization of passages on the keyboard, which is used by some players of clavier-operated instruments.

The kinæsthetic cue, much used by amateurs, is the most dangerous of all. This is the cue which consists in the muscular feel of the opening of a passage, or of its movement. This

use of kinæsthesia is objectionable for two reasons. The more obvious and superficial trouble is that the feel of a passage may not always be the same, particularly on a strange instrument. This is particularly evident in the case of an organist, who cannot rely at all on such cues in playing at a console with whose lay-out he is not thoroughly familiar. A more basic objection is that the kinæsthetic cue is relative, not absolute. It is the muscular feel of passing from one place to another within the composition. And so it does not give any fixed, invariable point of reference, completely outside the musical and muscular movement itself.

In closing, a word may be said about the general practice of playing from memory. This fashion is said to have been introduced arbitrarily by Liszt, who once threw away the score of a composition he was playing, and continued from memory, to the astonishment of his audience. It is very hard to find valid reasons for continuing to copy this example. Apart from the obvious inconvenience of turning pages, there is no apparant fundamental objection to using the score itself as the source of cues. Of course, the performer who had studied properly would not read note by note, but he could save himself very much toil, anxiety, and nervous strain by having the score open before him, for an occasional, reassuring glance. As it is, the memory problem is the most serious strain involved in public performance, and a fashion is being continued that constitutes a really terrifying ordeal without any good reason being evident.

CHAPTER V

MUSICAL FEELING

Psychologists have pointed out that music is the most emotional of the arts. When we admire a picture, our reaction is apt to be more or less along the line of saying to ourselves: "That is a beautiful picture." But when we listen to and enter into music we are carried away into a world of feeling. The music possesses us, flows through us, and sweeps us along with it. So it is that music has been called the language of the emotions, though this is a misleading phrase. But certainly musical feeling is the supreme outcome of musical culture. Music teaching, particularly with young children, which ignores feeling for the sake of intellectual and technical elements, is under constant threat of sterility. And a musician-ship which consists wholly of cleverness and learning — which enables one to manipulate an instrument with fiendish skill, or extemporize a fugue — but excludes the element of feeling is profoundly defective. There are artists before the public distinctly lacking in technique and judgment, but who have a vast appeal from the emotional quality of their work. And this, indeed, is legitimate.

But we cannot insist too strongly upon the fact that musical feeling is far from being merely arbitrary. It is orderly, disciplined, law-abiding. Ultimately it is based upon the factors of musical intelligence which we analyzed in the preceding chapter. Everyone responsible for musical education should recognize that this is so, for upon this idea de-

pend the very possibility of cultivating musical feeling as an expert skill, and the methods which must be used to do so.

THE EXTRINSIC SOURCES OF MUSICAL FEELING

The experimental studies have brought to light certain extrinsic sources of musical enjoyment. They show us that the distinctive mood or emotion by which we respond to a composition is not always produced by the music itself but by its extrinsic connections; that is, association and suggestion.

1. A considerable amount of the enjoyment we feel in a composition comes from its association. It is connected in our minds with pleasing events or beloved persons, and when we hear it these memories are more or less consciously revived. Sometimes rather trivial and ordinary music will affect us deeply through its associative connections.

There are several ways in which the teacher should capitalize the associations of music. Songs taught in kindergarten and the grades should be chosen in part for their associative appeal, and should be consciously linked in the minds of the pupils with events and persons in which pleasure has been found. In teaching appreciation in the junior high school and elsewhere, associative connections should be capitalized wherever they can be found. And the studio teacher will often find that associations determine the pupil's choice of repertoire; and always it is best to follow the line of natural inclination where one can, rather than roughly to antagonize it.

But the teacher cannot be wholly satisfied with feeling so caused. First, the attempt must be made to capitalize it in the interests of the best type of music, forming associative connections, if possible, with good music rather than with trash. Second, the teacher must try to build away from associative feeling to feeling produced by the intrinsic nature of the music as such.

2. Again, many compositions have a direct suggestive value, which explains their emotional appeal. They set up trains of imagination, in which scenes of high emotional interest are built up. Some people are particularly likely to indulge in these visual-emotional reveries in response to music. Very often the title of a composition has a subtle but pervasive suggestive effect which colors our whole attitude in listening. For instance, it is hard to believe that a clever banality like the famous "Liebestraum III" of Liszt should have preserved its popularity but for its interesting and romantic name.

There are, however, very definite limits to the suggestive power of music. In one test, pieces of "program music," written deliberately with the purpose of suggesting scenes or events, were played to a group of subjects who were found quite unable to agree on just what it was all about. Music, indeed, is not really a language at all, and essentially it expresses nothing, and contains its own beauty and meaning within itself.

This raises a very interesting point in elementary music pedagogy — namely, the connection of words with music in children's songs. Usually it is said that words and music should fit together, so that the one expresses the other, and that both should be taught with this connection made prominent. Are we to deny the validity of this rule and insist, on the contrary, that music ought to be taught separately from the words? By no means. It is very true that music in and of itself is incapable of definitely suggesting specific ideas and scenes. But to argue from this that comments and verbal "interpretations" of music are inadmissible or useless would clearly be a fallacy. As a matter of fact, verbal interpretations may be most helpful in setting up a proper mood. From the many possible ideas and scenes that the music might suggest, we take one, and we present it, not as a unique

explanation of the program of the music, but as a means of setting up an intelligible and definite mood in the listener or performer. Thus the connection of words with music for children is of the utmost importance. And explanations in appreciation work, and perhaps on concert programs, have a most important place.

Nevertheless it remains true that extrinsic moods are to be regarded as means rather than ends, however pedagogically valuable they may be. The teacher's constant aim must be to pass from these to higher and more valid standards of musical feeling. The extrinsic feelings, indeed, can be called musical by courtesy only. Musical feeling proper is the emotion aroused directly by the music itself. Extrinsic feeling, indeed, may be a hindrance to the proper apprehension and still more the proper performance of music. The pretty tales of artists inspired to supreme achievement in rendering erotic music by the presence of their lady-loves in the audience are most dubious. Experience indicates that this sort of emotion would be far more apt to make the performer lose concentration, fall about on wrong notes, and meet with the supreme disaster of forgetting. The teacher, too, should use these emotions in a very gingerly manner. To advise a pupil to try to play the Grieg "Erotikon" as if he were in love is positively vicious and may send him off on a wrong and undisciplined direction in his development. An emotionally powerful interpretation of music depends on no such elements as these. It is something far more austere and controlled — something essentially different.

THE INTRINSIC SOURCE OF MUSICAL FEELING

Music is an agency which makes a direct appeal to feeling. And it is here that we find the source of musical feeling proper.

In spite of many minor differences of opinion, psychologists

are pretty well agreed that emotion and feeling are largely dependent on intimate and profound bodily changes. When we experience emotion, the condition of the entire organism changes. The distribution of blood pressure in the circulatory system is altered, and even the chemical constitution of the blood changes. The rate of breathing is affected. The tone and tensility of the muscles are modified. The heart beats more rapidly. And the action of the digestive apparatus is modified. Indeed, when any external impression produces in us an emotional condition, the whole body resounds and responds very deeply to it. And a very large part of what we feel as the emotion is really the ill-defined and diffused feel of all these bodily changes. There is an easy means of proving to ourselves the very close dependence of emotional experience upon bodily change. For if we energetically imitate the facial expression and bodily postures and spasmodic movements of a person undergoing some strong emotion, we set up in ourselves the shadow, at least, of his own experience. This, of course, is the reason why a state of feeling is so readily transmitted through a crowd; for its various members all tend first of all to act in the same way, and in consequence they soon begin to feel in the same way. It explains, too, the powerful effect produced by an emotional speaker or actor. Although we do not fully or literally copy his gestures, we do tend to imitate them in the small, by inceptive movements and facial expression; and soon we begin to catch the flame of his own passion.

Now music is a psychic agency which produces the strongest and most remarkable bodily effects. Among the most important that have been detected experimentally are the following: (1) Music has the effect of increasing general sensory keenness. One investigation showed that if a card with lettering just too small to be read is shown, the letters become visible if music is played. Another almost grotesque piece of evidence was that

a subject responded to music by a violent toothache, the explanation being that one of his teeth needed treatment, and that the music increased the sensitivity of the nerves enough to bring the pain into consciousness. There is much additional material along similar lines. (2) Listening to music is regularly accompanied by disturbances in the distribution of the blood supply. These effects vary with different people and with different types of music. (3) Music has important effects also on the chemical constitution of the blood. (4) The rate of the heartbeat tends to increase in response to music. (5) Music has powerful effects on the digestive system, tending to increase its efficiency. (6) Music has strong effects on our muscular reactions. Our muscles beat in time to its rhythms. We are thrown into successive conditions of strain and relaxation. And our general muscular tonicity is increased by music.

These findings are exceedingly important in helping us to understand the nature and causation of musical feeling. If our bodies failed to resound to the stimulus of music, musical sound would, of course, continue to exist. The physical structure of the sound waves would remain the same, and they would affect our ears, and probably our auditory nerves, in the same way. But they would have no deep personal effect upon us, and the art of music would be impossible. This explains why certain attempts to create symphonies of odors were foredoomed to failure, and why the art of plastic color, as produced by the "color organ," is bound to remain inferior to music. Our bodies simply do not respond to other stimuli at all as they do to musical sound.

The human body, indeed, is the supreme musical instrument. The musical art wholly depends upon its innate constitution and on the intimate biological connections that have been set up through countless ages of evolution between the ears and the

entire muscular and visceral systems. Specifically in regard to musical feeling, it is evident that music sets up precisely those organic conditions on which emotion has been found to depend. Thus, in its own right, and without any extrinsic factors, it acts as a direct psychic stimulant, and immediately stirs up within us the authentic sources of all feeling. This explains its unique emotional character.

Now it is all-important to understand that this organic resonance is set up in response to tone structure or arrangement — that is, not to tone alone, but to planned and rhythmic tone. So musical feeling depends on the apprehension of musical structure — that is, on musical intelligence. Of course, there are many whose response to music is exceedingly emotional, although they do not possess a high development of musical intelligence. Their organic adjustment and their whole attitude as listeners is such that music is for them a stimulant of intoxicating strength, and it readily throws them into the grip of overpowering moods. But surely it is clear that such persons will enjoy music much more fully if, instead of responding merely to its general character, thrilling to its martial accent, leaping to the stir of a rapid beat, feeling an exquisite pleasure in a smooth, rich, and poignant melody, they are trained also to respond to the detail of structure that it actually contains, so that they appreciate also its subtle nuances, and enter into the splendor of its elaboration, and the *décor* of its form. The difference is that between an emotional response, which, however strong, is made to an only partially apprehended situation, and one that derives value from every subtlety and every element of meaning that composer or performer have introduced.

The fact is that musical feeling should be intelligent feeling. It is not something arbitrary, ill-disciplined, and wild that we contribute at our own good will and pleasure. It is a total

response to a fully understood and appreciated situation. The sort of musical feeling experienced by some people is like the emotion of a Zulu who finds himself in the jam of a strike mob, and is wildly excited by the pressure and rush of people about him, but, because he has no adequate understanding of the meaning of events, can have no adequate emotional response to them.

So, to arrive at a definition of musical feeling, we may say that essentially it is a discriminating, but appreciative and emotional response to the beauty of the musical structure. And that structure produces emotion in us by its direct stimulating appeal to the organism, in which it sets up a deep resonance.

CULTIVATING THE RESPONSE TO THE BEAUTY OF MUSIC

The cultivation of this power or tendency to respond emotionally to the beauty built into the structure of a composition is one of the great aims of training for musicianship. And the value of the foregoing psychological analysis is that it defines the precise nature of the goal and suggests the appropriate methods.

1. In the first place, every music pupil should be taught to recognize and enjoy the beauty of single tones and single chords. For critical and musicianly listening, as well as for any kind of instrumental work, the appreciation and enjoyment of fine tonal quality is of the utmost value. There are certain elements of beauty in music that do not seem to depend on tone, but they are few. And bad tone will go far toward ruining the artistic value of any performance.

So at every stage of musical education there should be an emphasis on tonal beauty. In public school singing, for instance, the children should never be allowed to yell, but always encouraged to hear, and to enjoy, and so to try to produce, tonal excellence. The music pupil should be en-

couraged to play and listen to individual notes, to saturate himself in their sheer sensory tonal beauty, and so to train himself to distinguish harshness and mellowness of timbre. He should have it impressed upon him that forced and extreme fortissimo at the expense of tonal quality is one of the crudest and most reprehensibly unmusical of faults. Applying the laws of learning to this problem, we must persistently use every possible device to have him repeat and enjoy good tone, and avoid and dislike bad tone. Many of the technical exercises that teachers assign are devices that train in the toleration and then the production of bad tone. It should be remembered that as a constituent of musicianship the tendency to enjoy and demand good tone, which of course leads to the persistent wish to produce it, is far more important than any manipulative skill in mere technique.

2. Again, the pupil should be taught to recognize and enjoy the beauty of the melodic phrase. To the pupil whose musical mind has been properly trained, the crude and barbarous rendering of a melody should be intolerable. It is true that if he is inexperienced he will not always be able, on his own initiative, to work out a valid treatment for a subtle melody. This is something that the teacher must often supply. But if the pupil's training is really moving in the right direction, he should at least feel dissatisfied with imperfect or wrong attempts at melodic interpretation, and accept the teacher's suggestions, not merely because they are given with authority, but because he appreciates their rightness.

The teacher who is teaching musicianship rather than stunts of dexterity should require the pupil to linger over each melodic turn, and to mold each phrase toward æsthetic and emotional perfection. There are two extremes of error in dealing with melody. On the one hand, there is the purely arbitrary melodic treatment, in which time, dynamics, and even rhythm,

are made the sport of whims. This ultimately arises from a perfectly false and artistically unworkable idea of what constitutes feeling in music. On the other hand, we have the unshaded, crude rendering of melody, without any expression at all, which makes musical nonsense of anything in the least complex, and musical banality of anything simple.

The beauty of melody consists in its organic, living unity, in which every note has its own individual and special function in carrying the vital idea, and in the movement toward completeness and finality. An emotionally and æsthetically tenable reading, then, gives each note its true value in the scheme of meaning. This note must be emphasized, and these shaded off; here we may press on the tempo, and here we must retard it; these are the decisions which the pupil must be able to make. And they are the decisions which characterize musicianship. They are the fruit of toil, reflection, and experimentation, for one cannot extemporize the melodîc treatment. And they are based on the psychological fact that our response to a melody is a response to its living unity, which we must appreciate, and into which we must fit every detail, if our emotional grasp of it is to be what it should.

3. Closely connected with our appreciation of the beauty of melody is our feeling for the beauty of harmonic sequence. The point here is that musicianship requires that we shall not be satisfied with any hit-or-miss harmonic background for the melody, but shall recognize the exquisite appropriateness of the composer's choice. It is probable that piano pupils make more mistakes — that is, play more false notes — in the accompanying harmony, than they do in the melody. And the reason is that their melodic appreciation is apt to be considerably in advance of the feeling for harmony. For mistakes are due more to mental and emotional than to technical and mechanical lapses.

The suggestions for building up an appreciation of melodic beauty can be largely transferred to harmony, *mutatis mutandis*. What we want is to train the pupil to enjoy and rejoice in the flow of the harmonic movement, exquisitely wedded to the melodic curve. The harmony, indeed, is a comment upon and interpretation of the melody, and should be felt and taught as such. The way to inspire the pupil with the wish to play the accompanying harmonies correctly is not to tell him to examine the score with great care, and to be sure that he is playing every note properly. It is consistently to encourage him to listen to the beauty of the sequences he is producing, to linger over and enjoy them, to play them again and again for their own sake, and to scheme out ways to make their effect more thrilling and perfect. This, too, is the basic method in teaching the use of the sustaining pedal on the piano. Pupils blur their pedaling because of defective appreciation of the possibilities of beauty first in the harmonic sequence, second in the melodic line, and last, in the effects of timbre which the pedal can yield. And here again we see the dependence of instrumental technique on the trained and discriminating musical mind.

4. Lastly we have in the structure of music a great source of musical feeling. And this too should be cultivated by the teacher. As we have already insisted, the abstract analysis of the composition, though important and valuable, is not enough. The structure must be apprehended musically, as well as in symbolic terms. And it must be more than recognized and understood. It must be apprehended as a source of beauty, as an expressive opportunity. Just as the pupil should be encouraged to mold the individual tone, the melodic phrase, and the harmonic sequence, to final perfection, so he should be required to mold the composition as a whole in such a way that his playing brings out the living unity that is there.

So in these various respects we see how intimately musical feeling is tied up with musical intelligence. Always it depends upon the objective structure of the composition. It is not something arbitrary, something undisciplined, something that we superadd at our whim and fancy. It turns on digging out the objective beauty which exists in every detail of the structure of the composition. For it is in and through this that music has upon us its unique psychic effect.

Of course, the central principles of the pedagogy of musical feeling turn precisely on this point. So far as details are concerned, there is little to add to the suggestions of the preceding chapters, for if the power of musical apprehension is properly cultivated, proper musical feeling will surely result. The only additional comment that needs to be made is to say that all the details of music teaching need to be begun, continued, and ended in the spirit of beauty and of the love of beauty.

This is a point that can well be taken to heart by all music teachers, whether their work is done in the school or the studio. In the past, unfortunately, a great deal of music teaching has been in the nature of hack work. This has been especially true of the teaching of elementary pupils, where the misfortune is doubly great because of the permanence of the damage that can be done. The old-fashioned chorus work in school, the unintelligent use of the excellent device of solfeggio, and the stupid methods employed in teaching the musical score, antagonized a great many pupils, and has probably done something to make the public regard music as a parlor trick unworthy of serious attention. Studio teachers, too, have enormously overemphasized motor technique, and music lessons have often meant drill on scales, exercises, and studies, rather than opportunities to come into vital contact with the inspiring beauties of musical art. Perhaps no one rule is more basic than that the business of the music teacher is to induct

pupils into the realm of musical beauty. Beginning with extrinsic sources of musical feeling, inculcating proper attitudes always, progressing as fast as the musical-mental growth of the pupil permits, the aim is always to lead him to an ability to appreciate and interpret the greatest works of musical art.

THE EXPRESSIVE DEVICES

We have insisted that true musical feeling is not something arbitrary or external to the music, added by whim and fancy. And so too, musical expression, which is obtained by various devices, is not arbitrary or extrinsic. The correct use of these devices is always along the line of liberating the meaning of the music, of making its outlines clearer, and of enabling the hearer better to appreciate the essential beauty which is ultimately the intent of the composer. And so it is possible to teach the use of these devices, because it always depends on objective principles which can be stated and understood.

1. The first expressive device which we should mention is clarity of musical enunciation. This indeed is fundamental, for without it the meaning of music cannot be intelligible. And it is a true device of expression, for it is the first and essential step for bringing the beauty of the music clearly to consciousness. Paderewski has strongly emphasized the need of insisting that the pupil be required to enunciate the musical elements clearly. He has pointed out that one of the most common faults of amateur musicianship is a blurring of the melodic outline and the harmonic sequence. And his own playing is an excellent exemplification of the principle, for, as many critics have remarked, he never allows a beautiful effect to pass by without taking the time and trouble to make it perfectly clear and intelligible to all careful listeners.

The reason why many pupils fail here — why their phrases are often imperfectly “played out,” and their harmonic

sequences often blurred and confused — is primarily that they are not taught to hear correctly. They fail first of all to set up in their minds a clear and valid auditory image of how the passages ought to sound. And then they learn them largely in terms of mechanical technical adjustment rather than in terms of musical effect, reversing the psychological order on which we have already insisted. And the result is a musically unsatisfactory performance — a performance which lacks “authority,” grasp, certainty, and emotional appeal — because it ignores the fundamental nature of music as an ordered system of sounds which is a direct emotional stimulant.

2. The next expressive device is that of dynamic shading. This again should never be used arbitrarily, but always as a means of rendering the music more intelligible, and so bringing out the true beauty which it embodies, since structure and beauty go hand in hand. It is not proposed here to attempt an exhaustive analysis of the principles of dynamic shading, but for the sake of concreteness we may refer to two of them. (a) Dynamic shading is necessary within the phrase. The curve of the melody needs, and indeed demands, a curve of loudness and softness to bring out its meaning. The essential melody notes are made prominent, and the others softened. If this is not done, the melodic curve sounds bald and unfeeling, and its æsthetic possibilities are not realized. And then, too, it is all-important to make the unessential accompaniment notes subsidiary. As has been well said, the problem of playing a melody correctly is not that of playing the melody louder than the accompaniment, but of playing the accompaniment softer than the melody. (b) Then we have the dynamic problem of the relationship of the various sections and subsections of the composition. There is more latitude for individual choice here, and of course there may be half a dozen different modes of correct dynamic treatment for the same

composition. But all of them must fall within the limits of psychological propriety, or they become wrong. In general, they must all have for their aim to bring out the beauty that lies in the general plan and balance of the composition. This is the canon that determines the correctness of such dynamic choices.

Just as the power of clear melodic and harmonic enunciation depends primarily on hearing, so also does the ability to play or sing with a valid dynamic choice within the phrase, or between the sections and subsections of the composition. The teacher who fails to train his pupils to hear imaginatively first and then to hear what they are actually doing will never produce a musicianly result. For technical dexterity is no substitute for a trained musical mentality.

3. The last of the expressive devices is that of tempo variation. We have already discussed this to some extent in connection with rhythm, where we saw that *tempo rubato* must never pass beyond the limits of rhythmic acceptance, or it becomes offensive. Now we are in a position to see the broader implications of this rule. A *tempo rubato* which violates rhythm, which breaks up the onflowing *Takt*, or which destroys our sense of the phrase-rhythm amounts to a destruction of the structure which is the essential element of the whole composition. And the whole purpose of tempo variation as an expressive device is to make that structure more clearly conscious — to bring out the shape of the melodies and the flow of the harmonies, and perhaps to sharpen up the rhythms — and in this way to assist the listener to grasp and respond to the beauty of what he hears.

No one has ever formulated the principle of the *tempo rubato* better than Tobias Matthay, the veteran and revered teacher of piano at the Royal Academy of Music.¹ He points

¹ Matthay, Tobias, *Musical Interpretation*, Longmans Green.

out that it is always necessary to compensate for the rubato. Every slowing of the tempo must be balanced by a corresponding quickening, so that we come out at the end of the phrase actually on the beat of the metronome. Thus tempo change is not a mere dragging at the tempo, but a waving curve which fluctuates on both sides of the level line of the *Takt*. To this, of course, must be added that the tempo fluctuations must not be too great. For always the point is first and foremost that tempo change must not interfere with rhythm, for otherwise it throws the whole composition out of line, and second that it should be undertaken, not for its own sake, or for arbitrary effect, but as a faithful attempt to realize what there is of beauty and meaning in the composition.

Here again the best advice that can be given the teacher is to train the pupil to hear the music as it should be played — to hear it both imaginatively and actually. For this is the basis of all musicianship, executant and otherwise.

THE RÔLE OF EXTRINSIC SOURCES OF FEELING

Having discussed the characteristics of musical feeling proper, it may be useful to return for a moment to the part that can properly be played by extrinsic factors in musical enjoyment. For after all, these factors are always present, and probably even the most sophisticated musician feels something of their force. The point seems to be this. Titles, footnotes, suggested programs which the music is supposed to "express," stories about how the composition came to be written, human interest material and historical data about the composer, the "tradition" of the composition generally, all have value in so far as they help to set the stage for the proper attitude and mood for reception. These things are particularly valuable, of course, when an unfamiliar composition is being presented, for a musically unskilled listener will hardly be

able to orient himself to anything intricate, and thus will lose the intended effect. In passing we may remark that this is the psychological explanation of an audience's preference for the familiar — it has not the skill to adapt itself swiftly to the new, and so is unable to enjoy it to the full. For to enjoy a composition we must at once grasp it and surrender ourselves to it, and this involves the assumption of an attitude from the very first chord.

Both for the pupil and the audience, then, extraneous aids to musical understanding and feeling are not to be despised. But they are only aids — not substitutes for the real thing. For musicianly feeling arises directly out of the immediate impression of the structure of the composition itself.

CHAPTER VI

MEASURING THE MUSICAL MIND

Within the last twelve years a considerable amount of attention has been directed to the problem of testing and measuring the various capacities of the musical mind, whose nature and training we have been discussing. And a body of very valuable tests has been devised and is now available for the music teacher, for use both in studio and classroom. It is now our purpose to review and evaluate this material.

The aim of the present chapter is not to provide anything like a manual for measuring the powers of the musical mind. What we shall try to do is to inform the reader of what is actually available and of what may be hoped from its use. It is evidently of importance for the teacher to know to what extent it is possible to decide whether a pupil shows musical ability before any work with him has been started, and whether it is possible to take an adult who has had considerable musical training and decide upon his native ability. Attempts along this line are constantly being made in the public schools, and the tests are now largely used for vocational guidance in music. So, clearly, we are under obligation to analyze and evaluate them with some care, in order to make up our minds as to just what they can give us and what they cannot yield.

TWO VIEWPOINTS IN THE MEASURING OF MUSICAL CAPACITY

Attempts to work out schemes for the measuring of the musical mind have been developed from two points of view, both of which have certain values and advantages.

1. First of all we have sets of tests which ultimately have a theoretical and acoustical basis. That is to say, they are tests of acoustic sensitivity rather than of musical ability itself. This is the general characteristic of the tests devised by Seashore, which are now in wide use. They undertake to measure the various elementary sensory and perceptual abilities on which the power to hear music correctly depends. As such, of course, they are exceedingly valuable. If a person is tone-deaf, if he is unable to differentiate between semitones, or if his feeling for consonance is radically defective, it is very clear that not much can be hoped for from him in the way of musical development. He lacks some of the basic and essential ingredients of the musical mind, and he will never be able to develop its higher powers, such as intelligence and feeling. But, on the other hand, these tests do little to give us positive criteria. Their tendency is to tell us what prospective pupils we should not educate, which pupils should not be encouraged to study the most sensitive instruments, such as the violin, but should be directed toward the piano, and so on. For although it is true that musicianship is impossible without fine hearing, and that accordingly there will be a close correspondence between the group made up of those who show musical ability and the one made up of those with good ears, fine hearing alone is no positive warrant of musical-mindedness but only one of its necessary conditions.

The great value of the Seashore tests is twofold. First of all, they are analytic. Seashore protests against the use of actual musical material in testing work. What he attempts is to deal with the elemental sensory and motor abilities on which the power to deal with musical material depends. And this, of course, is a valid and essential aim in any program of measuring; of its distinctive advantages not the least being that we can measure such a capacity as that for discriminat-

ing pitch very accurately indeed, whereas this is not possible with more complex mental functions. Second, Seashore has been able to standardize his material, and establish norms for the guidance of the teacher and adviser because he has been in a position to try his tests out on large numbers of school children. So these tests are the only work in the field that has been adequately standardized — that is to say, the only tests that have been used enough so that we can predict just how well the normal child ought to do.

2. On the other hand, we have testing schemes which have the more ambitious aim of testing and measuring musical ability proper. They do not concentrate on its sensory or motor elements, but they use actual musical material under controlled conditions. Thus they are synthetic rather than analytic. They seek to deal with the actual elements of musical performance and response.

Tests with this aim have been developed by a number of German students of the psychology of music. Briefly stated, the notable work is as follows. Rupp was first in the field, with a program for measuring musical ability. More elaborate and satisfactory is the work of Révész. This author began by publishing a careful study of the musical responses of a young prodigy, Erwin Nyireghazi. And his results furnished him with the basis for a series of tests of musicality. The Pannenburgs, too, have contributed a most elaborate study, aimed to determine the characteristics of the musician, based on an analysis of musical biographies and the examination of over three thousand school children and upward of four hundred musicians. Heinitz, again, has put out some very suggestive diagnostic studies, based on work done in his studio.¹

The strength and weakness of this work seem to be quite

¹ For detailed references *vide* the bibliography on page 292.

obvious. On the one hand, it is not standardized. The authors have not had access to large numbers of subjects, and consequently they do not offer any reliable norms. On the other hand, it does aim at the direct and positive measurement of musicianly power. It is precisely the converse of the work of Seashore. For the general psychology and pedagogy of music it is most instructive, for instead of being based on a theoretical survey of acoustical sensitivity, it is founded on actual study and analysis of concrete cases of working musical talent. In this way it is direct and positive, rather than theoretical and negative, in its aim and approach.

All in all, the teacher who wishes to assess the musical capacities of a pupil would be well advised to use both kinds of material to check and supplement each other.

THE AIM AND PROMISE OF TESTS OF MUSICAL TALENT

If we examine the prefatory statements of those who have devised methods of measuring the musical mind, we are impressed by their uniform moderation. All that is really attempted is to grade people into the unmusical, the moderately musical, and the very musical. Some few further subdivisions are attempted, but these are the outstanding results which we are led to expect.

Practically nothing has been done to investigate the order of emergence of musical ability at various age levels. We do not know, and we have no means of knowing, whether musicality appears in one form at the age of six, another at the age of twelve, and yet another at the age of eighteen.

The tests enable us to give a little advice as to the kind of musical training that can profitably be undertaken, but in the main this is negative. We can say beforehand that a pupil who shows defective pitch discrimination should not study the violin; that if his lung capacity or the muscular develop-

ment of the vocal box is definitely inferior, he should not try to become a singer ; and that if he shows undue muscular clumsiness, he may become an intelligent listener or an effective composer, but not a good executant artist. But whether there is any fundamental and assignable difference between ability for the piano, the organ, or the violin, we do not know.

In other words, the tests tend to measure the larger degrees of musicality, but not its finer subdivisions, and not its various kinds or qualities. With this preliminary, let us now turn to an examination of the actual material itself.

TESTS FOR AUDITORY ACUITY

The tests laid out by Seashore, which may be said in general to aim at measuring the acuity and precision of auditory perception, are as follows : (1) Tests for the perception of pitch, which include those for the upper and lower limits of hearing, but of which by far the most important is that for measuring the power to discriminate pitch differences. (2) Tests for the perception of intensity, aiming either at detecting the faintest audible tone or measuring the power to differentiate intensities. Of these the latter is the more important. (3) Tests for the accuracy of time-perception. The standard method here is to mark off time intervals by means of clicks, and to discover the smallest perceptible difference in duration between two such intervals. (4) Tests of rhythmic perception, which turn chiefly on the measurement of rhythmic accuracy. The essential point of the method is to mark off two time intervals by clicks, and to call for judgments on their equality or otherwise. (5) Tests for the perception of timbre or tonal quality, in which the quality is built up by sets of electrically driven tuning forks, giving the overtones above the fundamental which can be modified at will, revealing minimal perceptible differences in timbre. (6) Tests of consonance, in which all

two-tone combinations within the octave are compared and rated for consonance on the criteria we have already described, the method of paired comparisons being used.

This battery of tests, which is exceedingly useful and valuable, and is now being widely employed, calls for a number of comments.

First of all, the perception of intensities hardly deserves to rank as one of the most important auditory constituents of musical ability. Of course, notable clumsiness here will lead to defective listening and performing. But it hardly ranks with the other functions.

As to the tests for time and rhythm, our first remark is that these are not really tests of auditory ability at all, and only to be so classified because intervals are marked off by auditory signals instead of flashes or touches, for instance. But secondly, a very serious objection attaches to the rhythm test. Essentially it aims to measure the subject's ability to judge the equality or inequality of two time intervals. But, as we have seen, the best and most authoritative experimental work on rhythm has conclusively shown that this power is quite accidental to rhythmic perception as such, for we have musicians with a very fine rhythmic insight who regularly find it impossible to time iambs, triplets, etc., accurately at all. The whole notion that the rhythmic element in music depends on an objectively equal flow of time intervals is fallacious, for in music timing depends on rhythm, and not vice versa, as the Seashore procedure regularly and clearly seems to assume. When we have tested the power to time, we have not really tested rhythm at all. In fact, no satisfactory rhythm test has at present been evolved, and Seashore's test is indubitably based on a misconception of the nature of rhythm. Révész came nearer to dealing with the true nature of the rhythmic experience in his test which consisted in having the subjects

clap out a rhythm given either by clicks or in a melody, for here we have the essential characteristic — muscular action. But even he dealt with and evaluated his results in terms of temporal accuracy. He finds that the rhythmic sense, as he measures it, has little relationship to musical ability. But the reason seems to be not at all that rhythm is not a fundamental element in music, but that his test, which is better than Seashore's, fails to measure its true nature.

The test for the perception of timbre is an excellent one, but for the practical teacher it involves the difficulty of calling for expensive apparatus; for a battery of electrically driven tuning forks is rarely to be found outside a well-equipped physics or psychology laboratory.

All in all, the negative value of these tests is evident. Anyone who fails in them cannot be a musician. But it is far from being true that everyone who succeeds in them is certain or likely to become one, even with training. If employed with a recognition of their purposes and limitations, they are exceedingly useful. And, of course, they have the great advantages of being readily available, and also of being standardized by large experience.

TESTS OF MOTILITY

Of somewhat the same general character and significance are the tests for motor control. These aim at revealing either the speed of the individual's motor-reactions, or else their accuracy. Their value lies in the fact that they reveal one's native capacity for developing instrumental technique.

Let us begin by considering tests for the speed of reactions. Seashore's tests for speed of reaction are as follows: (1) Tap-ping rate, which can be simply determined by finding out how many dots the subject can make with a pencil on a piece of paper in five seconds. (2) Timed action, which is measured

either by finding the average error in tapping in time to a set standard, or the average error in uniformity in free marking time. (3) Simple reaction-time, which is the average time taken to react by some simple movement, such as pressing a telegraph key, in response to a simple stimulus, the swiftest human reaction-time being about one-tenth of a second. (4) Compound reaction-time, where the stimulus is made more complex, as for instance by giving series of loud and soft clicks, and telling the subject to respond by pressing the key only to the loud clicks. (5) Serial action, where the subject's own reaction brings the stimulus for the next before him. Seashore explains in detail how a typewriter may be rigged up for this test. He points out that here we are dealing with a function similar in some respects to that involved in reading music.

For measuring precision we need to use some form of precision target. The simplest consists of an electrically connected plate with holes in it just large enough to permit the entry of a needle-point stylus without making contact with the plate. The stylus itself is electrically connected and, if it touches the plate, a circuit is completed and a record made. The test consists in finding out into how many holes the subject can thrust the stylus without touching the plate.

These tests are all open to the same criticism. Under laboratory conditions, where there is plenty of time and where instructions can be very carefully given, they are excellent and reliable. But they are time-consuming, and often technically quite difficult. To determine the tapping rate with accuracy is by no means so easy as it sounds; for the subject must first have plenty of practice, or he fails to develop his maximum speed, owing to cramping of the wrist while holding the pencil. And even where expertly supervised practice has been given, we must take the average of many attempts to eliminate chance errors. Simple and compound reaction-

times, too, are by no means easy to determine. The subject has to be trained in the right attitude of mind and the right direction of attention, and the control must be exceedingly rigid and precise, or otherwise the results are useless. And in any case, we must take the average of a large number of tries before we can be at all sure that we are down to bedrock. And it is a very doubtful assumption that the serial action test really measures the function used by an expert musician in reading music; for, as we shall argue, the musical score ought to mean sound primarily rather than movement, and so the habit-connection is from sight to sound to movement, rather than directly from sight to movement.

A test of motility both simpler and technically superior to any of these may be obtained by the use of the instrument known as the passometer. This is essentially a modified pedometer, which is adjusted to record vibrations much more rapid than those caught by the ordinary pedometer. The passometer is strapped to the hand, and the subject is instructed to vibrate the hand, with the wrist free. It takes only a little practice for maximum speed to be reached, and then we tell the subject to vibrate the hand as fast as he can, with complete muscular freedom, marking off ten seconds with the stopwatch, and then counting the number of vibrations. This is a technically valid device because it measures the tremor-rate, which is one of the ultimate physiological facts of the organism, and is determined by the frequency of the nervous discharge, which is something beyond our control altogether. To a great extent this does away with the need of a special precision-test, for a fast tremor-rate correlates closely with precision. This test is recommended for any studio examination of motility that may be desired. It has great general significance. If the tremor-rate is established at ten vibrations per second, we know that this is the ultimate limit of speed which the

individual can develop at any simple reaction. Such a person could probably develop a rate of about eighteen notes per second on the piano, because piano action is a double movement, one member descending while the other ascends. So here we have a simple means of determining ultimate technical limitations, which no amount of practice can ever augment. The instruments required are not very costly — a stopwatch and a passometer being all that are needed, and an ordinarily careful experimenter can, in ten minutes, make a very accurate estimate of anyone's basic motility by this means.

DIRECT TESTS OF MUSICAL ABILITY

These tests have been developed from a different point of view from that of Seashore, and are aimed at a different goal. Their purpose is not to uncover the fundamental sensitivity on which musical ability depends, but directly to measure that ability.

Probably the nearest approach to testing of this kind developed by Seashore is his measures of musical imagery, which is certainly a direct manifestation of musical capacity. For if one can vividly image music, it is an almost certain indication of some considerable degree of ear-mindedness. With adults Seashore recommends the use of an elaborate questionnaire, in which the individual rates himself on his ability clearly to image certain sounds. With children, the questionnaire method and the self-rating system are used, but the questions are less elaborate. He also suggests that we break off a simple melody, such as "America," at a certain note, and require the children to rate themselves on the clearness with which they can image the next note which is first imagined, and then played, so that we may provide an actual sensory standard for judging the auditory image. This procedure is elaborated in various ways.

Of course there is no doubt of the great importance of musical imagery or "inner hearing." But there are two objections which these tests must face. First of all, any scheme for self-rating on an elusive piece of introspection is bound to be most uncertain, particularly with children. And there is no way at all of checking up satisfactorily on the subject's report — we must just accept what he tells us, as true and accurate. And secondly, the power to use musical imagery is exceedingly responsive to training, so that its apparent absence may very well be due, not to lack of native ability, but merely to an untrained and unskillful attitude toward musical material.

The following are the most important direct tests of musical ability developed by the German investigators: (1) Tests of the rhythmic sense, on which we have already commented, and which were not found particularly successful. (2) Absolute pitch, as measured by the ability to reproduce instrumentally a tone that had just been played. This power is regarded as a symptom of unusual musical talent by the investigators. Probably this is usually true, although sometimes absolute pitch memory is found in extremely unmusical persons, where it seems to constitute a special stunt. (3) Relative pitch, in which an interval is played, and then reproduced vocally, with a new tone for its bass. This is regarded as indicative of good to average musical ability. (4) Harmonic sense, which was tested by having the children reproduce vocally the constituent notes of chords. This again was found to correlate highly with good to average musical talent. (5) Melodic memory, in which the test was to reproduce a melody after hearing it once or twice. Révész had the children sing the melody after hearing it played on the piano. Heinitz, on the other hand, carried the test further. Rather than use ordinary musical melodies, he wrote special themes of great simplicity, and dictated these on the piano or the

violin or the flute. Then his musically untrained subjects had to reproduce them on the instruments themselves. This involved not only the ability to grasp and reproduce the melody, but also readiness of adaptability to the sounds produced by, and the manipulation of, the instruments. It is, so far as we know, the only attempt that has ever been made to investigate special native adaptability to one instrument in preference to others. The power vocally to reproduce a melody is of higher diagnostic value than any other direct test of musicality, and can be used so readily that its employment in the studio seems very natural and desirable. (6) The ability to play a known tune by ear is also regarded as a good sign of musical ability.

It should be noted that in some measure all these tests, and in particular the last two, involve the factor of musical intelligence, as we have analyzed it. So we see that on the one hand the value of this work is that it aims at measuring the higher and more complex musical functions, while its defect is its lack of standardization and precision.

Reliable tests for musical feeling do not exist. But the sensitive and musicianly teacher can do a good deal in the way of diagnosing it by careful observation. If the pupil definitely tries to improve, if he seems continually to develop more sensitiveness to the structural beauty of the composition, if he comes more and more to recognize the merely arbitrary as wrong and inartistic, it is safe to believe that he is endowed by nature with a promising degree of musical feeling and musical intelligence, which go hand in hand.

THE RELATION OF MUSICAL ABILITY TO GENERAL INTELLIGENCE

All the German studies tend to show that there is a very strong probability that outstanding musical gift is accom-

panied by intelligence well above the average. On general grounds this might be expected; for after all, musical intelligence is only one aspect of general intelligence — or better, it is general intelligence operating in the musical medium. Turning to more specific evidence, the studies indicate that if children are classified as musical, half-musical, and non-musical, it is the first group the largest proportion of whose members make satisfactory progress in school. And again, if we take intelligence, either as measured on a testing scale, or in terms of school success, we find musical talent grouping about the upper end of the scale. No mistake could be greater than to suppose that musicianship and stupidity go together. This peculiar fable may have arisen from the defective general education of some musicians, made inevitable by their intense specialization. But every music teacher knows that musicianship cannot be developed in its fullness in any but the receptive and intelligent, though to be sure the stupid, and even the defective, can be taught to build up a repertoire of instrumental or vocal fireworks.

For the rest, the musical child is likely to be healthy, well-grown, physically active, socially disposed, impulsive, and in general extroverted. The myth of the naturally “sissified” musician, who is an anti-social recluse, has been shattered by the study made by the Pannenburgs, to which we have already referred. The fact is that musicianship involves a certain healthy animality, a fund of physical energy which carries over into the mental and emotional sphere; for it is perhaps the highest-pitched of all human creative activities.

THE PROBLEM OF THE UNMUSICAL

One special survey has been made of the problem of the unmusical individual,¹ and its chief findings are of educational

¹ Schüssler, H., “Das unmusikalisches Kind,” *Zschr. f. angew. Psychol.*, 1916, 11.

interest for the studio and the classroom. In general it confirms the diagnostic value of the tests for direct musical talent which we have briefly described, for it is found, in particular, that unmusical children fail not only in absolute but also in relative pitch memory. It suggests that there are probably between five and ten per cent of unmusical people in the population. Still, most, if not all of them, can profit to some extent by musical training of an elementary kind, and this should be afforded.

PART II

THE FUNCTIONAL OUTCOMES OF MUSICAL TRAINING: LISTENING, PERFORMANCE, COMPOSITION

CHAPTER VII

TRAINING FOR MUSICIANLY LISTENING

Having completed our study of the constituents of the musical mind, and analyzed the various habits and skills on which musicianship depends, we now turn to another aspect of our subject, and deal with the various functions in which musicianship issues. These are listening, performance, and composition. All three are expressions or activities of the musical mind, and unless an individual possesses trained musicianship, he cannot hope to discharge any of them with satisfaction. So once more we see that the primary aim in musical education must be what may properly be described as mental training — that is to say, the building up of the various capacities on which any kind of musical activity depends — and not the development of a technique for its own sake. But listening, performance, and composition all involve certain special psychological and pedagogical problems of their own, although all of them depend absolutely on musicianship, and are no more than special expressions of it.

No experienced concert-goer who has paid any attention at all to the reactions of the audience can fail to understand that a great many people are eminently unsophisticated and unmusicianly in listening to music. Even in great metropolitan recitals one cannot help but see that many members of the audience obviously lack the skills and insights necessary for proper, discriminating, and artistically emotional hearing, and show a striking inability to take the proper attitude toward

music. We all know the individual who is far more impressed by the prestige of the artist than by the actual excellence of his performance; and only too often the most perfect renderings fall flat when offered by an unknown or unpretentious musician, while really reprehensible displays by men of great reputation are enthusiastically received. Then too, music is often regarded as a social diversion rather than as one of the great expressions of the human spirit. All this simply means poverty of musical insight, and lack of musical training. The ideal situation is where musicianship is displayed, not only on the platform, but also in the body of the concert hall.

At the outset of the discussion we may formulate a question that may naturally occur to the reader. Granted that listening is in itself an act of musical-mental skill, is it possible to train and build up this skill in those who have little time to spend on the technical detail of music? Can one become a good listener without applying one's self to instrumental or vocal music, or without studying so-called "theoretical music"?

This question has such an important bearing on the pedagogy of musical appreciation, and is of an interest so general that a little time may well be devoted to analyzing it, although it will be answered more or less definitely, by implication at least, in the following pages.

1. To begin with some generalizations, we may say that the outlook is moderately promising for those who wish to develop in themselves a capacity for understanding and appreciating music, but who cannot devote themselves to its more technical details. Still, there are very definite limitations to musical training that confines itself to nothing but this. Undoubtedly the best way to train one's self to skill in listening is to take up the intensive study of music. The reason is simple, and should be obvious from all that has gone

before. Listening is one of the great expressions of musicianship. And musicianship consists of a large number of complex habits and skills, which are not to be acquired in any fullness, save by toil and time. And so the degree to which one to whom technical music must be a closed book can build up skill in listening depends precisely upon the degree to which he can acquire the habits and skills of the musician. There is no doubt that much may be done, and a real contribution may be made to the insight and intelligent emotional reactions of such a person, for many agencies exist which have this for one of their aims. And the task is simply one of taking advantage of the educational possibilities of such agencies.

2. But it may be asked: Just why should the intensive study of vocal or instrumental technique make people into better listeners? It is, of course, obvious that a grasp of motor technique enables us better to understand and admire the special manipulative excellencies of a performance. But this is only a very small part of the story. The real reason is that the study of motor technique is far more than the learning of conjuring tricks. It is a building of the ability to express musical meanings through the medium of instrument or voice. And thus intensive work along such lines improves not merely our muscular dexterity but also our musical grasp. For it involves intense analytical application to the detail of the music, and a very specific understanding of its significance.

3. For those who are unable to enter upon the intensive study of the voice or an instrument, there is yet another technical facility which can be of immense service in listening. This is the power to read the musical score. The score, with all its anomalies and imperfections, is the best symbolism for music that has yet been devised. And power to read the score operates to increase and make more specific our grasp of musical meaning just as knowledge of the technical terminology of

a special field of knowledge helps our grasp of it. It is here that the public schools can be of great help. Considering the great part music plays in life, one is tempted to say that everyone ought to be able to read music. Certain it is that the mere teaching of the score can be made a real stage in musical training, and that the power to read it will enormously facilitate work in appreciation. We regard the teaching of the score in the elementary grades as being from every standpoint a sound pedagogical proceeding.

THE IMPORTANCE OF MUSICIANLY LISTENING

Musicianly listening is the basis of all musical culture. The very greatest musicians have found in it a source of the highest inspiration. We may, for instance, remember how the Beethoven symphonies, first heard, came to the young Wagner like a portent and a revelation, affecting his whole development. And what is true of the giants holds for all. Listening to music well is one of the great businesses of the musician.

Let us try to understand the importance of listening for the various groups of people interested in music.

1. Opportunities for listening are perhaps of supremest importance for the music pupil, especially during his more formative years. Those of us who have followed music from childhood can probably all remember vividly the awe and delight with which we attended our first concert by a famous artist. And such experiences are of the highest educative value in developing standards of musicianship. One of the greatest obstacles faced by the music teacher, especially in the smaller centers, is that many of his pupils have never heard a first-rate performance of great works. This means that they simply have no conception of what music really is, and it makes for lack of enthusiasm and an easy acceptance of and compla-

cence over fifth-rate achievement. The studio teacher should do anything and everything to offset this educational disadvantage, and the schools should coöperate.

More specifically, listening to music is of value for the music pupil for the following reasons: (1) It provides a very great incentive to intense and self-critical work. The pupil longs to be able himself to produce the effects which he has admired. (2) It provides standards of achievement which actually function. It leads to that discontent with everything but the best which is one of the surest causes of artistic progress. (3) It easily leads to a valuable hero-worship for great artists, which the teacher can readily capitalize and make a motive for study. (4) It makes the pupil acquainted with the great compositions. (5) Closely connected with this last point is the value of listening in building up what we may call a passive repertoire. By this we mean a repertoire of works which have been heard and admired, and which the pupil hopes someday to learn for himself. The desire to learn certain compositions is one of the great motives in the study of music, and the wise teacher should cultivate such a desire, and capitalize it.

Thus the teacher should encourage pupils to take advantage of every opportunity to hear worthy performances, should talk them over, both before and after, and should build a good deal of his teaching around such actual musical experiences.

2. The power to listen well is of high importance for the music teacher. In order to be of real service to his pupils, he must first have the skill to hear what they are actually doing when they play or sing, and, secondly, he must have such standards that will enable him to make the necessary corrections. For good music teaching, technical proficiency is not enough. What is needed is human, functioning musicianship, based on wide musical experience. The greatest teachers have had much to give because of the breadth of their

musical experience, and because, on the basis of that experience, they have become *virtuosi*, not so much at performance as at listening. A limited musical experience on the part of the teacher tends directly toward low standards, contentment with less than the best, and a lack of artistic enthusiasm. And these things cannot be compensated for by the more formal aspects of a musical education, or a degree of Bachelor of Music from a well-known conservatory.

3. For the concert artists and creative musicians of all grades, the opportunity to hear the best music is of high value. Every musician benefits enormously by the refreshment of hearing music. For listening is one of the legitimate expressions of his musicianship, and for him music probably means more than for anyone else.

4. Lastly, we should consider the typical member of the "musical public," who has not time to devote to the intensive cultivation of music, but to whom the art means much and who desires that it shall mean more. For him two things are necessary — the provision of musical opportunity and effective guidance in using it. For such an individual, listening is the only form of musicianly activity possible, and it is a genuine obligation to help him to listen well. For expert listening turns on the ability to hear, enter into, and fully enjoy what actually happens when music is played, to grasp and appreciate the innumerable beauties of great works nobly rendered. To anyone who possesses this trained power, music becomes a source of strength and joy in life, for he becomes heir to one of the greatest traditions of human culture and achievement and enters a world of living beauty.

THE CULTIVATION OF MUSICIANLY LISTENING

In order to cultivate the power of musicianly listening, there are two general conditions that must be met.

1. First of all, it is necessary to have plentiful opportunities for hearing music. Once we grant that listening is an act of skill, it becomes evident that we can never acquire it except by use and practice. The person to whom a good concert is an unusual event can hardly hope to be able to take the right and expert attitude toward a musical performance. One needs to steep one's self in music in order to be able to hear it aright. :

2. But mere opportunities to hear music are not enough. For here, as in every other kind of learning, what is necessary is not practice alone, but directed practice. We must know how to listen, to what elements to attend, and which to ignore. Otherwise we fail to build up real skill, and when we are "exposed" to music, we tend to take an indiscriminating attitude, which may be very emotional, but which partakes of the nature of indulgence rather than of intelligence. Indeed, there is a positive risk in unguided listening, for it is quite easy to build up a false attitude which may grow upon us until we cannot break it. This is a danger to which the music pupil is particularly liable. For him a concert may be positively pernicious, for, unless he is instructed, it is all too easy for him to enjoy the bad things rather than the good things that the artist does, and thus false standards of taste are set up which issue in false standards of achievement. There are before the public some great artists whose influence on young music students has been mischievous because they take liberties which may be allowable to them, but which the unwarned listener tends to copy to his own undoing, while ignoring the fine and austere musicianly qualities of the performance.

To take a case in point from musical history, we may cite both Paganini and Liszt. While they were both very great artists and musicians whose general influence on musical history has, of course, been valuable beyond estimate, they must

have been exceedingly dangerous to the average, uncautious listener. Paganini, as is well known, was fond of making arrangements to have violin strings break in the midst of complex passages, in order to show off his technique by continuing to play. And Liszt was in the habit of introducing perfectly illegitimate fireworks into the greatest compositions, a trick which once brought upon him the richly deserved hisses of an audience of music students. Here we have two cases where the conspicuous stunt may seem far more impressive and wonderful, and far more worth trying to copy, than the careful, thoughtful, and musicianly effect. And though there is nothing so flagrant now before the public, we are not without some examples of the same kind.

So our business in educating for effective listening is to teach the listener what he ought to hear and enjoy in the performance. In other words, we must deliberately try to build up in him a legitimate attitude of appreciation. To repeat, this is one of the characteristic expressions of the musical mind, whose constituents we have already discussed. The attitude of appreciation is psychologically complex, however, and involves the musical skills in various orders, and with varying emphases. Experimental psychology has pretty well familiarized us with its basic constituents, and these we now go on to analyze, in order clearly to define what is necessary for its effective training.

FACTORS IN MUSICAL ENJOYMENT

We are now to consider the various sources of musical pleasure which have been identified in various listeners, some of them musically trained and some untrained. No doubt our list is not entirely complete, and some persons derive enjoyment from factors which we do not consider. But the sources of pleasure which we shall discuss have been identified

in several independent investigations, carried on with varied and representative groups of listeners, and so may fairly be regarded as the most important and typical. The value of studying these factors is that it gives us a good idea of what actually takes place in the mind of the listener, and so enables us to decide how we ought to go about building up more skillful and musicianly attitudes.

1. First comes the factor of association. Many listeners find pleasure in music because it calls up pleasing associations with past experience. This is especially the case when familiar compositions are heard, but it is found that associations often occur in connection with new music, because of its resemblance to something already known. Even in cases where the melody is not clearly or accurately remembered, it tends to call up a wealth of imaginal and emotional elements, connected with the situation where it was first heard, or with which it has been impressively associated. While the pleasure derived from this source is hardly to be described as typically musical, it is none the less important. Associations may very readily lead a pupil to wish to learn some composition, or to return to it with zest, and to work hard at it. Those who have studied music from childhood almost always have emotional associations with some compositions, and the teacher is wise to take advantage of such elements of interest and desire. In specific training for listening, too, associative pleasure has its uses. For people are naturally interested in compositions connected with past situations of a moving character. And though this is not a factor in the skilled musical attitude itself, it is often a good starting-point for building that attitude. The listener may be led from his present associative interest, to analyze the composition, to appreciate new beauties in it, or perhaps to recognize, after all, that its musical value is limited. As in all teaching, actual present

interest is always a good psychological starting-point for further development. Still, the associative interest can be little more than a starting-point, and there are other and far more valid sources of musical pleasure that ought to be specifically cultivated.

2. Some listeners, though by no means all, report an extraordinary flow of visual imagery in response to music. When a composition is played, it readily calls up before them an elaborate series of imaginary moving pictures, sometimes connected together into a complex and fantastic plot. Those who are not affected in this way will perhaps be apt to think that this is something merely arbitrary, something more or less deliberately invented and consciously thought out. But the studies show that such is not the case. A listener of this type will usually feel that his play of visual imagery is wholly or partially beyond immediate control, that it flows on independently of him, and is directly caused by the music.

Here again we have a factor which may be capitalized without, however, being extensively encouraged, for after all, it is not an essential element in musical skill proper. Still, anything that tends to stimulate and maintain interest in a composition, and a disposition to study and analyze it further, is in itself good and valuable, and when nature presents us with a starting-point it would be folly to ignore it. The problem here is to utilize the flow of visual imagery as a source of natural interest, while at the same time encouraging the growth of more skillful attitudes in listening. Visual imagery may readily become a mere indulgence, and may, indeed, come between the essential realities of the composition and the listener. For skillful listening does not consist in adding arbitrary and personal elements to the composition, but in constructively accepting what the music says, and recognizing and appreciating its beauty.

3. The personality of the artist is apt to be inextricably connected with the music itself in the mind of the hearer. If his attitude in performing seems cold, bored, slipshod, or indifferent, our enjoyment of his work suffers. If he seems under strain, this transfers itself to his audience, and they respond to his seeming tensions and discomforts rather than to any excellencies in his work itself. On the other hand, if he gives himself up to the task of interpretation with apparent enthusiasm, if he seems at his ease and to be carrying out a task well within his powers, if he has the aspect of commanding the situation, and if, at the same time, he shows by the many small signs that can be given, that he is *en rapport* both with the music and the audience, many a blemish will be passed over even by highly critical listeners, and the rest of the audience are apt to react very favorably. The personality of the artist may, indeed, be so dominant that the music itself almost seems to take a secondary place, and we approach the plane of musical oratory, which may be bad art, but is supremely effective.

Here, perhaps, we have a piece of psychology which is of more interest to those preparing for public performance than for the listener. Manners, poise, certainty, and the radiation of a superabundant power and charm, have an effect even on the most coldly analytic of listeners, which no concert artist can for an instant safely forget.

From the standpoint of training the listener, our comment is practically the same as in the two previous cases. The performance of an artist of powerful personality is apt to rouse enthusiasm for what he plays, for in many ways it is an act of salesmanship. The task, once more, is not to dampen such enthusiasm by rude, even though quite just, criticisms of the performance that has been enjoyed. Rather we must seek to capitalize the interest that has been aroused, leading

toward the further study of the composition, so that better standards and more musicianly skills are gained not by the negative route, which is always dangerous because it may kill all enthusiasm, but constructively, by supplanting the lesser and lower skills and standards.

4. A more definitely musicianly element in listening than those we have so far discussed is the mood aroused by the composition. The mood, as it were, envelops and surrounds the composition, and constitutes its emotional and psychic environment. To arouse the appropriate mood, then, should be one of the great aims in training for effective and skillful listening. A composition can very easily fail of its effect, because the listener fails to understand and set up the mood in which it should be received. Our moods in listening to a piece of jazz, a Beethoven sonata, a composition by Debussy, a Hungarian folk-song, and an eighteenth century dance are entirely different, and we can completely ruin the effect of a composition if we fail to gear ourselves properly to it. Those who dislike jazz and popular ballad music do so for the basic reason that they refuse to accept the mood involved in such music. The musical philistine is bored by what he calls "classical music," largely because he sets up resistances to it which consist in moods of non-acceptance.

So, in training people to listen to music, the emotional setting, or enveloping mood, should always be made very clear. Titles are often used for this end with good effect. For instance, some pianists have given names to all the Chopin preludes and the Mendelssohn songs without words, and announce them on their programs. Sometimes, too, a suggestive program is worked out for a composition, though this is a more doubtful device, for what we want is just enough to insure the right attitude, and no more, and an elaborate "program" imposed on the composition tends to deflect atten-

tion away from the music itself. Notes and comments, too, are always beneficial, and help the effect of the performance. Items from musical history can often be used with good result. And one task of the teacher, whether in offering a course in appreciation, or in dealing with the individual pupil, is to explain the mood of the composition, and thus attune the hearer to it. We may note that the vocalist has a comparatively easy task in setting up and maintaining the right mood in his hearers, for he sings words that are a running comment on the music.

5. Somewhat closely connected with mood is what has often been called the symbolic element in musical enjoyment. It is pointed out that our enjoyment of a composition often depends on our feeling that it expresses the spirit of a historical period, or of its composer. Behind many a minuet we have intimations of the stately social forms of the rococo period. The Olympian figure of Bach is faintly discernible in many a contrapuntal masterpiece. In his sonatas we catch a glimpse of the stormy Beethoven, with his giant intellectual and emotional powers. And the pale, romantic face of Chopin shines through the tracery of his music.

Here we have a perfectly valid factor in musical enjoyment, which is shared by the most sophisticated and critical of listeners and performers. And so in seeking to build up skill in listening, the historic and personal background of a composition is an asset which we should never ignore. What is wanted, of course, is not a profound and detailed study of musical history. The technical detail of the invention of the equal temperament will hardly increase our enjoyment of the "Well-Tempered Clavier," but a knowledge of why the work was written, and of the spirit and type of beauty it contains, is very important for proper appreciation of what to many is insufferably boring music.

6. Another factor in musical enjoyment which the experimental work discloses as important is pleasure in tonal color or timbre. This varies widely as between individuals, but usually plays a part. In musically untrained persons it is the obvious and striking qualities and combinations of quality that are naturally of the greatest interest. We may be very sure that the average member of a motion-picture audience takes far more pleasure in the *vox humana* stop on the organ than does the organist. The point for training is that we should begin with the individual's own natural preferences in the matter of tonal quality, and work for catholicity and subtlety of taste. The method in general is to call special attention to the element of timbre, to ask the listener to pick out the special inflections and qualities of various instruments and voices, and of the same instrument under varying conditions, and to warn him not to take a negative attitude to those he does not prefer, but always to aim at perceiving beauty where beauty really is.

The power to hear good tone, which is the basis of the attitude of demanding good tone, is one of the most musicianly of characteristics. There is no question that music teachers, as a body, should devote more attention to it than they ordinarily do.

7. Free and full rhythmic reaction is perhaps the most important of all sources of musical enjoyment. It is the one factor that is invariably found in the appreciative listener, however unsophisticated, or however highly trained he may be. It varies all the way from the most obvious tendency to beat time outwardly, to the subtlest inward marking of the beat. As we have seen, it is one of the prime constituents of the musical mind, and without it there would literally be no such thing as musical experience. What we have already said about training the rhythmic sense applies directly to

training for skillful listening, and so, important though the topic is, we need not enlarge on it again. One comment should be made, however. The power to grasp rhythm is the basis of the power to play rhythm, and so we see again, and specifically, how basic is listening for musical culture.

8. The complementary and related factors of anticipation and surprise are extremely important in determining musical pleasure. We have seen that ultimately we grasp the structure of a composition in terms of just these factors. We feel the composition as a developing unity, moving toward an end which continually becomes clearer. All elements of complexity must be felt as fitting into and contributing to this end or goal, and though the richness of the composer's thought may surprise us, the novelties he introduces must all be in line with the general plan and the general attitude it sets up in us, or they become incongruities.

This feeling for the structure of music — for its melodic and harmonic form and its general plan — is no doubt the most complex and sophisticated of all factors in listening. It is the most rarely acquired, because it calls for a fair amount of special study and application, but it is one of the most constant and satisfying sources of pure musical enjoyment. In any case, pains should be taken to explain the structural elements, at least in an elementary way, whenever this can be done, as a preliminary to hearing a musical work performed. This will be found to contribute substantially to the enjoyment of the work, not because it brings in an element of knowledge, but because it makes possible those discriminating anticipations and reactions of surprise through which musical intelligence expresses itself, and which are the psychic mechanisms in terms of which we grasp musical form.

The highly expert musician is able to utilize this source of pleasure far more fully than anyone else. He has been trained

to handle the structural element in music in terms of convenient symbols. In this way he is able very readily to disentangle all the complexities of the work as it proceeds, and has a clear sense of just what developments are taking place. His vivid comprehension of the composer's thought is for him an authentic source of interest and artistic pleasure. This is an ideal outcome of training, but to some degree it may be approached by anyone who will take the time and trouble to analyze or have analyzed for him what he is about to hear, thus leading to better appreciation of the particular composition involved, and a more skillful attitude toward music in general.

TYPES OF LISTENERS

Another approach to the psychology and pedagogy of listening is by way of classifying the various recognizable types of listeners. The investigations enable us to distinguish three such types—those who are predominantly intellectual in their reaction, those who are predominantly motor, and those who are predominantly emotional.

1. The characteristics of the intellectual type are an extreme and coldly analytical interest in the structure of the composition and the technical merits and demerits of the performance. Such an attitude is only possible to those who have had a great deal of specialized musical training. In its extreme and almost pure manifestations it is rather rarely found, though perhaps not so seldom as the uninitiated might suppose. But it is, after all, a partial and unsatisfactory orientation to music. Music, to be sure, necessarily involves the elements of planfulness and skill, and these can be singled out for attention for their own sake. But it involves many other elements as well, and if we do not respond to these, our musicianship is to that extent defective. For the critic, the purely intellectual attitude is dangerous and a source of

weakness, for one of the functions of criticism is to report emotional reactions. The music teacher, again, must certainly be highly analytic in listening to his pupils; but if he is nothing more than this he will certainly fail to inspire them, and will not direct them toward the highest and completest outcomes of musical education. And the purely intellectualistic performer, to whom the playing of music is wholly an affair of mental grasp and manipulative skill, gives a reading that is legitimately condemned as dry and uninteresting — legitimately so, because it is really defective musically.

2. The motor attitude in listening, again, in its pure and extreme form, means a concentration of interest on nothing but the rhythm. Such listeners will be fascinated by strongly rhythmic compositions, and will care for little else. This attitude, which is far less sophisticated than the former, is essentially one of self-indulgence rather than of artistic appreciation. It singles out one of the constituents of music, and narrows down to this alone. In dealing with a listener of this type we should by no means discourage his natural rhythmic enjoyment, but we should seek to build on it a wider and saner taste.

3. The extreme of the emotional attitude is found in those to whom music is hardly an artistic product at all, but a sort of psychic drug, an opportunity for perfectly arbitrary moods and feelings. Such persons will enjoy most kinds of music — but their enjoyment is hardly to be described as musicianly in any real sense. Once again, they treat music as an indulgence. The problem of dealing with them is not to attack their emotional attitude, which is a source of great pleasure and interest, but to capitalize it, and to train them to be sensitive to other elements in music. Extreme and unbalanced emotionality is a problem in a pupil, and a danger in an artist. Musical feeling, as we have insisted, is far indeed from being

arbitrary and undisciplined. It is not something contributed at will by the hearer, but is essentially an appreciation of the beauty of the musical structure. And in dealing with the very emotional type, the task must be to mold and discipline feeling without discouraging fine enthusiasm or making the individual feel that he is painfully crude and inept in listening to music.

Of course, absolutely pure types never exist in actual practice. To say the least of it, this is a lucky thing for the music teacher. And the aim of musical education in general, and of musical education specifically directed toward the outcome of skilled listening, must be to produce a working balance between the various elements of intellect, motor response, and feeling, based on an understanding of the constitution of the musical mind.

THE AGENCIES FOR TRAINING IN EFFECTIVE LISTENING

Having now discussed in general the psychological and pedagogical points involved in listening to music, it may be helpful to analyze the educational values and possibilities of the chief agencies which exist for favoring this skill. All teachers and most persons interested in music know very well what these agencies are. But what is needed is an analytic study of the real sources of their usefulness, so that they may be employed and enjoyed to the best advantage.

1. The concert is a standard musical device, which contains large educational possibilities. The pedagogical value of a concert in training the listener depends almost entirely upon the amount of previous preparation that can be provided. Many people go to concerts as a social duty, or at most with the hope of receiving the sort of mild amusement derivable from a good motion picture. And for them, of course, the educational and developmental result is negligible. Prepara-

tion is all-important in securing the right and intelligent attitude on which depends the real value of the performance for the listener. Too often his attitude is largely at the mercy of the advertiser. He needs to be told beforehand what items of musical importance will appear, how to orient himself to what will be played, what to discount and what to accept in the artist's presentation and personality, and what beauties he should be able to hear and appreciate in the works and their rendering. Such preliminary preparation is now very generally provided by means of program notes in the recital and the artists' series, and by the admirable and popular device of the lecture recital. Very often, too, conservatories and schools of music will provide opportunities for hearing an analysis and historical account of great works that are soon to be performed by distinguished artists, and from the educational point of view this is entirely sound. Every teacher ought to duplicate this as far as possible with his pupils. And if the highest value is to be gotten from the concert, there should be some opportunity of discussing what has been heard, with experts, afterward. Criticisms in the newspapers, except in a very few cases, do not supply this need at all adequately, but it should be done if we are at all serious about developing musicianship on the plane of expert listening.

2. Formal courses constitute another important device for training the listener. First of all, we have the appreciation course, now widely used in the schools. So long as it does not degenerate into a content course in history or theory on the one hand, or into a mere "exposure" to music on the other, its results are usually extremely good. Then, the studio teacher is always well-advised to employ the device of class-playing. This not only gives pupils confidence before an audience, but it trains them to appreciate the essentials of musicianship. For they listen to renderings that are neces-

sarily imperfect, and trace one another's musical growth. Such opportunities for watching musicianship actually developing have the greatest value in building skill in listening to the musical result itself, as distinct from the reputation of the artist.

3. The various formal and informal musical societies are capable of great things in building up musicianship on the basis of expert listening. There can be no doubt that one explanation of the high level of musical taste in Germany is due to the wide prevalence of groups devoted to the production of music. And one of the most hopeful signs in this country is the multiplication of such groups among us, which, though as yet artistically crude in the main, are moving in the right direction.

The music teacher should advise his pupils to take every possible advantage of opportunities to join such groups. The glee club, the church choir, the chorus, the band, all have high value in helping toward a constructive and discriminating attitude toward music. Unfortunately, the most valuable of such groups is practically never found among us as yet. This is the amateur chamber-music group. Music teachers may well look back as to a golden age to those days when among the upper classes the ability to join in chamber music was a common mark of gentlemanly cultivation. In any case, group experience with music should form a part of every musical education, because from it musicianly values of many kinds may be derived.

4. Mention should also be made of mechanical music, which has undoubtedly come to stay. The phonograph, the mechanical piano, and the radio, have provided all of us with musical opportunities undreamed of a few years ago. The educational advantages to be gained from these media again depend entirely upon attitude and preparation. On the one hand

they can be most valuable adjuncts to musical education, while on the other they may be useless or even harmful, as making for superficial listening and facile and half-attentive enjoyment. In any case, one of the real tasks of musical leadership is to capitalize these devices as means of training and development, and to use them in raising our national as well as our individual standards of taste.

5. We have postponed until the end a discussion of what is by all odds the most important and promising agency for teaching good listening — namely, the public school. Public school work in music has the enormous advantage of being systematic, and continuous over a period of years. While it may not aim at developing high specialized technical skill, it can do a very great deal in building musicianship, and thus preparing the way for the studio. And one great service it can render, both to those who will develop music intensively and those who will not, is to train them in effective listening.

A. The work of the first six grades usually centers about the reading of the musical score. This is entirely proper, for reading music, as we have already remarked, is a very basic skill, and the traditional concern of the grades is with the fundamentals. If we could choose the one thing to do for those who were not going to continue their musical training at all beyond the sixth grade, we would reply: "Teach them to read the score easily." If, on the other hand, we were to pick out the one skill which would later lead to the most solid kind of appreciation work, and to the readiest power to coöperate in musical organizations, our answer would be the same. Properly organized teaching in score-reading can be a rich training in the bases of musicianship, as we shall see later, when we discuss public school music *in extenso*.

B. In secondary work, three main lines of development branch off from this tap-root. We have, perhaps in junior

high school, specialized work in appreciation, introducing instrumental music of various kinds, and the great cyclic forms. We also have musical organizations, whose true educative purpose should be to develop and reinforce appreciation, by participation. And we have courses in theory. In these ways the propædeutics of the grades lead to the most solid and satisfactory kind of musical outcomes. It is amazing to find a development of public music so solid, so sound, and so infinitely promising for the artistic future of our nation.

CHAPTER VIII

TRAINING FOR MUSICIANLY PERFORMANCE

The second avenue along which the musical mind expresses itself is in the performance of vocal or instrumental music. All the various factors that we analyzed in the first part of our discussion enter in here — musical hearing, musical feeling for rhythm, musical intelligence, and musical emotion. But there is one new and special element in the situation to which no consideration has yet been given. This is technique, whose essential nature and meaning we are now to study.

THE NATURE OF TECHNIQUE

Let us begin with a definition. *Technique is the ability to produce by instrumental or vocal means a musically intelligible and beautiful result.* It will be seen at once that this definition is wholly in terms of function or outcome. And this is indeed the only possible way to characterize technique at all if we are not to fall into the crudest errors both in understanding musical performance and in trying to produce it. Technique is not, in essence, a power to perform motor stunts. It does not consist in speed, or agility, or command of tone, or dynamic range, although all these are necessary to it. It consists basically in the power to produce music.

We doubt very much whether there is any factor in musical training and accomplishment that is more profoundly misunderstood than technique. Back of a great deal of thinking about music, and even of a great deal of the study and teaching

of music, lies the notion that what we must really aim at is manipulative skill, for its own sake. We all too readily tend to assume that playing an instrument is a skill of the same class as juggling. And this leads at once to a toleration of false standards, and a setting up of goals for teaching and study that are illegitimate. Let us try to enumerate some of the worst and most pernicious of the misunderstandings to which a wrong conception of musical technique actually leads.

1. Laymen will often make the comment about a performance, that it shows technique but lacks feeling. This, to be sure, is not impossible. But usually what is meant is that the performer seems able to play fast and long and loud, but that his work lacks the finer shades of musical significance. In this case it is not true to say that it shows high technical accomplishment. For technique expresses itself in the perfect modulation of a phrase, in the correct rendering of the plan of the composition, in the dynamic shadings, and in the treatment of the tempo, just as much as it does in playing at terrific speed, or producing an overpowering fortissimo. When a rendering lacks musical quality, when the instrument, as it were, comes between the performer and the expression of musical ideas, the trouble is with the technique itself. In ninety-nine cases out of a hundred, what the layman calls a technically excellent but musically poor performance is really one where technical expertness itself is notably lacking.

2. Music pupils often slave to acquire something that they call technique. If they are enthusiastic, they very readily impose on themselves an enormous weight of futile drudgery. We shall discuss this point more fully when we come to deal with practicing, but for the moment we may say that technical and musical development ought to go hand in hand and that the pupil should always enjoy what he is doing because it is an effort, not to strengthen muscles or acquire speed for its

own sake, but to produce the musical outcome which he wishes. The study of technique should be a labor of musical love, not a hard grind at meaningless acrobatics.

3. Teachers tend to assign formal technical studies of various kinds without stopping to ask why they do so, but merely because it is traditional. Formal studies undoubtedly have their place, but there should always be a reason for assigning them that is just as definite as a doctor's reason for prescribing a drug. And this reason should always be made clear to the pupil. He should see that he must practice certain kinds of movements in order to produce the musical results he desires. A story is told of Kullak once stunning a pupil with the abrupt question: "What do you know of double thirds?" and incontinently rushing the full length of the keyboard in a chromatic scale in double thirds. The development of formal technique at this level is valuable and psychologically correct for the concert artist, because he perceives the necessity for it in terms of musical results to be achieved. But for the pupil it is the very reverse of a psychologically sound procedure. Once more we repeat, the very nature of technique is such that technical and musical development must go hand in hand. All that we know of the psychology of learning is conclusive on the point that we practice to far greater advantage if we have some really appealing goal in sight for our efforts.

4. Then there is the peculiar but most persistent idea that it is possible to grade compositions sharply on a scale of technical difficulty. It is true that some works make very great demands on endurance, speed, and flexibility. But the point is not so much that no compositions are very difficult as that few are really easy. Of course, there are many works where there is no difficulty in singing or playing the notes at the required tempo. But this is only the beginning of a

technically adequate performance. There may be as much virtuosity in the molding of a phrase, in the perfect outlining of a harmonic sequence, in the subordination of one part to another, in the simplest song or instrumental composition, as there is in the brilliant performance of a startling cadenza. In fact, some musical works are difficult precisely because of their simplicity, which shows up every least divergence from perfection. And this difficulty is just as truly technical, and turns just as definitely on motor control, as those encountered in the most elaborate show pieces and operatic arias.

5. Finally this account throws much light on the central problem of teaching technique to young children. Here there are extremes of tendency. On the one hand, we have the viewpoint which we have already mentioned as being represented in many studios, which insists that the child should be loaded down with gymnastics. On the other hand, we have the viewpoint of the grade teacher of public school music, who often claims that she will not try to teach any technique at all. The former emphasis is clearly at fault, simply because gymnastics never exist for their own sake, and should never be made an end in themselves. But we cannot wholly agree with the latter. If the public school teacher means that she is not trying to teach the intricacies of voice control, or to develop great agility, then she is right. But stunts are not the essence of technique. When the public school music teacher trains her children to produce and enjoy good tone, to grasp and carry the melody, to hear the harmony, to coördinate to the rhythmic units with free and easy movements, she is in fact teaching at once the basis of technique and the basis of musicality. Though her work may be done in the medium of the voice, yet if it is well done it will certainly transfer very readily to instrumental skill. And though the children never develop (and probably they never should) the showy technical

stunts, they are being given a firm basis from which rapid progress can be made. And, of course, there is one piece of technique which is usually taught in the schools without being recognized clearly as such — the technique of reading the musical score.

All in all, then, the tendency to divorce technique from musicianship is false and fatal. It involves definitely wrong and mischievous educational standards. What the music teacher must always drive at is musicianship, and if he does not build this up, he can congratulate himself on having done nothing to justify his existence.

THE RELATION OF THE PERFORMER TO THE INSTRUMENT

We have seen that the psychological basis of music is the profound response of our bodies to sound. The human body is the original musical instrument, and musical culture turns on the education of our responses to ordered sound to the highest pitch of delicacy and perfection. Now when an expert and musicianly performer occupies himself with his instrument, the situation is not essentially one in which he is manipulating a foreign and extraneous mechanical device. Rather, the instrument becomes an extension of his body. He becomes one with it, and it becomes one with him, and it sings and throbs with the singing and throbbing of his body. Here we have what the critics call a feeling for the instrument. And this is the ultimate aim of all manipulative skill.

We may illustrate this by considering the musical values of the various instruments. The most natural and sensitive of all instruments is the human voice. We often feel music in the vocal apparatus without singing it at all. And the technique of singing merely means the sort of control needed to exteriorize the inward surge of the music. In the sensitivity of their response to organic conditions, certain wind instru-

ments seem to stand next in order to the voice itself, for here we merely substitute an artificial for the natural larynx. Next comes the violin, for the sweep of the bowing arm is a natural physical expression of musical impressions. The piano is one degree further removed from the natural organic adjustments on which musical enjoyment depends, although in the range and flexibility of its acoustic possibilities it has a plausible claim to be regarded as the best of all instruments.¹ And the least "natural," and most artificially manipulative, instrument is the organ, which is relatively insensitive to the fine shadings and demands of the human body and which depends for its musical value chiefly on its enormous range of tonal effect.

Technique, then, consists in a unity between performer and instrument so close and intimate as to be almost identity — a unity which makes the instrument an extension of the musically sensitive and responsive human body rather than a dead mechanical device. The musician who has a good technique has, *ipso facto*, the power to use his instrument as a means of translating the musical pulses which possess him, and which constitute the very essence of his musical thought and feeling, into sound vibrations to which others can respond.

THE RELATION OF EAR-MINDEDNESS TO TECHNIQUE

A trained musical mind is clearly the basis for technique as we have defined it. Here we have the foundation of the whole structure. In working for that bodily coördination which is needed for the perfect identification with his instrument that we recognize as the very essence of skill, it is absolutely necessary that the pupil should always have clearly before him an intelligible and appealing musical goal. He

¹ This statement is made by Miller, *The Science of Musical Sounds*, pp. 207-8.

must know for what precise effect he is working, and then be led to make experiments until he finds the right way of producing it. This mode of production must then be made habitual and automatic. This, of course, follows from our definition of technique as the production of musical results. But it seems worth while to point out its importance somewhat more in detail.

1. Working at technical development and physical skill with a clear-cut musical result always before the pupil makes his practice intelligent, because it then has an aim. Aimless learning is inefficient learning. It is wasteful both of time and effort. And a great deal of practicing for technique is open to the most serious criticism along this line. Music students are frequently heard to lament that they slave at technique, but that their development seems painfully slow, or even completely arrested. Such difficulties come from more than one source, although they can always be diagnosed fully, and usually overcome by proper direction. But one great cause of weakness is that their practice is aimless. They are working in terms of a wholly false notion of the nature of instrumental technique, and they fail to build up skill in spite of their efforts, because those efforts are wrongly steered.

2. Working at technical development with the musical result desired always explicitly in mind gives the pupil standards by which he can measure his own development. One of the greatest encouragements and incentives in learning is the knowledge of one's own progress. And here the pupil is always in the situation of working toward an interesting goal to which he can feel himself steadily approaching. There is for him all the difference in the world between trying to pass the hand over the thumb or to make the bowing movements, just as the teacher has told him to, and trying to make a passage sound in all details as it should in order to be musically

intelligible. Moreover, if the pupil practices always with a musical goal before him, he will not easily rest content with partial success. He knows the effects he should produce, and it is a constant source of annoyance and a constant incentive to further effort when he fails in part to obtain them.

3. Working at technical development for the sake of desired musical results is zestful. The pupil has a strong motive to practice, to analyze his movements, and to overcome clumsiness and stiffness. Scales and exercises are the bugbear of many children, yet there are some experienced and distinguished teachers of music who actually insist that one should always begin with technique, and hold the child to large doses of formal drill very early in his development. This precisely reverses the correct psychological and logical order. Formal exercises, as we have said, have their place. But always the pupil should see and feel the need for them in terms of musical goals. That is, he should be led to desire to overcome some mechanical difficulty in order to achieve results impossible otherwise. Everyone who has given any serious attention to the science of education knows well that unmotivated learning is inefficient learning. And the teacher who insists on technique for its own sake rather than for the sake of music, first hampers and impedes technical development itself, and second runs a great risk of making all work at music odious to the child.

4. Working at technique with musical goals in mind actually leads to results. It is little less than astonishing how quickly progress is made under these conditions. Every month the pupil is delightfully conscious of improvement. His sense of oneness with and command of the instrument increases. He finds himself able to play with greater and greater satisfaction. And it becomes increasingly apparent to him that really high executant ability is only a matter of time and persistent effort.

By setting up musical goals for work we do much to avoid the tragedies which darken every music school — the students who have worked at instrumental technique till their muscles and ligaments are strained, or until they become victims of neuritis. Everyone intimately acquainted with the musical profession knows heart-rending stories of zealous pupils wrongly directed, squandering their physical and financial resources, and all the time becoming increasingly doubtful whether they are making any progress at all. The development of executant skill is never easy, and the teacher who, by bad methods and a stupid adherence to psychologically false traditions, makes it harder is taking a heavy responsibility.

THE TECHNIQUE OF READING THE MUSICAL SCORE

In dealing with reading, the most central point to have in mind is that reading skill depends upon proper eye movement. Careful photographic studies have been made of the movement of the eyes in reading ordinary script, and many of the results so obtained transfer also to the reading of the score. Some direct observations have been made of the movement of the eyes in reading music, but these, of course, have no high degree of accuracy. And at the present time work is actually carried on in applying the photographic method to the problem. When this is published we shall know just how the eyes behave in reading score. Still, our present knowledge is quite sufficiently specific for us to understand the main outlines of the technique of reading.

1. It is found that in reading, the eyes do not move continuously forward, but progress in a series of jumps and pauses. It is during the pauses that we actually read. What we actually see in reading a page of script for its sense rather than for its typographical errors is not each separate word and still less each separate letter, but the general outline or

contour of the writing. An average reader will require perhaps three glances to grasp the meaning of a ten-word line of print. When the material is difficult or obscure, we move more slowly, and take many more glances to a line. When we read rapidly, our eye movement speeds up, and we glance only twice, or perhaps even only once, at each line. Some readers seem able to cover very large areas of writing at a single glance, which is the motor basis for very fast reading.

The type of eye movement involved in reading music is considerably more complex than that employed in reading ordinary script, because the score is decidedly the more complex pattern, and has a far greater extent up and down. But in essentials the motor skills are identical. The eyes move in a discontinuous series, and we actually read in the pauses. And again, the difference between the good and the poor reader is that the one has a regular and well-balanced eye movement which enables him to assimilate a great deal at each glance, while the other does not. This is well illustrated by stories about Liszt told by his pupils, who found it extraordinarily hard to turn pages for him because his eyes were so far ahead of his hands.

2. Bad reading habits have been demonstrated to possess a motor basis. The bad reader's eyes move in a far less controlled and regular manner than those of the good reader. The bad reader has to glance back more often. And if he meets with complexities, he is thrown into what the investigators have called "periods of confusion," during which his eyes dart here and there, helplessly trying to pick up the right clues. Thus the bad reader is not able to grasp nearly so much at a glance as the good reader. His span is shorter, his pace is slower, and his accuracy less.

3. In good reading, a great deal is inferential. That is we do not look at, or directly and literally see every detail of

the script or score. If it were possible to photograph what we do actually see when we read fast, we would probably be amazed at its paucity. What we do is to spot the salient features, and fill in the rest by rapid inference. We all know how easy it is to overlook typographical mistakes as we are carried forward by the sense. And this applies also to the reading of music.

This analysis enables us to enumerate and understand the essential principles involved in teaching good music-reading habits.

1. Proper eye movement depends more upon proper comprehension than on any other one thing. This is true of ordinary script where eye movement is always better where the meaning is clearer. And it is true also of music. So reading music should not be taught as a kind of stunt, for it depends on a developed musical intelligence and a power to grasp musical meaning. A proper training of the musical mind is the really sovereign specific for making a good reader. Here again we see the close unity between technique and musicality.

2. The kind of reading habit we wish to *avoid* is where the pupil looks at each note separately, and then makes the adjustment needed to play or sing it, and then looks for the next, etc. The unit is the unit of musical significance. And the score should come to mean *sound* first and foremost. The true neuro-muscular connection of the good reader seems to be from the eyes to the auditory centers, and thence to the operating muscles, rather than from the eyes to the muscles direct. This is because essentially the meaning of the score is sound, and it must be so apprehended.

3. The musical score should at times be studied when it is not actually being played or sung. This is for the purpose of teaching the pupil that skill of "hearing with the eyes," which

the best teachers advocate, and which is the true basis of good reading. In teaching the score to grade school classes, it is always good procedure to have them follow along the notes as the teacher sings. This is something far too much neglected in most studio teaching, where new compositions are thrown at pupils without any adequate preparation, with necessarily meager pedagogical outcomes. As a matter of fact, having pupils follow music from the score without trying to play or sing it is as valuable a technical drill as any of the ordinary exercises for developing manual dexterity. To repeat at the risk of tedium, it tends to make the score directly *mean sound*, and to train the pupil to catch from it the musically significant units.

4. It is very obvious that so-called "theoretical music," properly taught, can be a great help in reading music, simply because it inducts the pupil more specifically and in detail into the musical significance of the score.

5. In addition to all this, teachers should understand that good eye movement habits can be directly and definitely encouraged. Train the pupils quickly to grasp the general musical drift of the score. Then let them play or sing on to the natural stopping places, and completely ignore the mistakes that are almost sure to be made. To ignore mistakes may seem like strange advice, but its wisdom will be seen if we remember what we are trying to do. We are trying to build the habit of progressive, orderly eye movement. We build this just like any other — by encouraging its use, and by discouraging any other kind of eye movement. And if this is our goal, it is clear that we must not pull pupils up every time they make mistakes. This, to be sure, will tend to train them not to make mistakes — if by mistakes we mean the singing or playing of wrong notes. But it will train them to make mistakes of a far more serious and injurious kind; for they will tend to develop wrong habits of eye movement, and to

build up precisely the worrying note movement correlation which is the foe of all good reading. Wrong notes are negligible compared with wrong habits. And if the habits are right, in time the notes will look after themselves.

EXECUTANT TECHNIQUE: I. ITS BASIC CONDITIONS

We now turn to a discussion of the type of motor control needed to play an instrument or manage the voice. In a general way we have seen how execution and musical conception are interdependent, so that technical and musical development should go together. Now we are to show in more detail how executant technique is absolutely dependent upon our apprehension of the meaning of the music which is to be played or sung.

In connection with our discussion of rhythm, it was shown that the complex rhythmic pattern, consisting of phrase superimposed upon *Takt*, which constitutes what might be called the skeleton of music, is always carried by the agency of muscular coördination. When rhythm is apprehended at all, it is always grasped in terms of muscular coördination and kinæsthesia. Now this general principle holds equally for *all* who apprehend musical rhythm at all — for listeners and performers alike. But for the performer a special problem exists, which in no way affects the listener. The hearer of music is free to carry the rhythmic pattern by means of coördination and pulsation in any set of muscles that may be most convenient. He feels the beat of a march in his feet and legs, the sway of a syncopation in incipient movements of the trunk and head, and so on. But for the performer this freedom is not possible. The performer is, so to speak, attached to an instrument which is a projection of his body. And it is his problem to employ this instrument to translate his musical insights into sound waves. Thus it will be necessary for him

to feel the rhythm in terms of muscular coördinations and pulsations of those members which actuate the instrument. The vocalist feels the rhythm of *Takt* and phrase in the muscles of the chest, and throat; the pianist feels it in terms of coördinations that lead to proper keyboard attack; the violinist feels it in terms of movements of his bowing arm. This, of course, does not mean that the performer may not feel the rhythm in terms of various coördinations other than those directly connected with the instrument. He may tap with his feet, or move his head and trunk as he plays, just as a listener does. But his essential problem is to transfer the bodily pulsations, in terms of which the rhythmic structure is sensed, to the members connecting him with his instrument.

We have here the most basic difference between good and bad technique. In good technique, each rhythmic, meaningful unit — each phrase superimposed on the accentuated line of the *Takt* — is converted into an easy, unified muscular coördination of the kind needed to actuate the instrument. It is fired off, and the organism is immediately ready for the next. Good technique is rhythmical. Bad technique is not.

This account has far-reaching and numerous implications.

1. We may say that a good technique consists in the power to apprehend the rhythmic structure of music in and through a specialized series of movements, demanded by instrumental exigencies. To put it in other words, a good technique is a sort of cultivated musical-muscular intelligence.

2. Our account shows clearly that speed and dexterity are essentially secondary elements. Yet as we shall see, the best way to attain them is to build up from the basis of a rhythmically coördinated and relaxed muscular attack. The real secret of speed, power, endurance, and control of nuance is to economize strength by giving out each rhythmic unit on a muscular pulse, and then completely relaxing for the next.

3. Our account explains a phenomenon that often troubles conscientious teachers and pupils. For sometimes very dexterous playing, with all notes given correctly, will sound somehow wrong, out of line, and unmusical. While on the other hand, one often hears strikingly musical playing in the absence of any great mechanism. How is this? The reason is that it is possible to build up a perverse dexterity, which consists in flying glibly about, but which ignores the rhythmic pulsation. Music so played will sound unintelligible, because it is essentially unrhythmic. What it needs is pulling together — structural organization. And a dexterity which produces these results, ignoring the rhythmic subdivisions which show how the coördinations and relaxations should flow along, partakes of the nature of muscular stupidity.

4. Here again a point emerges on which we have insisted previously. For we see that the proper teaching of rhythm really supplies the foundation on which the executant mechanism can be raised. This is without doubt the true approach to the study of technique by the young child.

EXECUTANT TECHNIQUE: II. TYPES OF MOVEMENT INVOLVED

A good technique, as we have described it, involves the skilled use of various types of movement. For scientific purposes we should classify movements in terms of the type of neuro-muscular control required to bring them about. And this gives us by far the best insight into the detail of technique. From this standpoint we recognize three kinds of movement — posture, controlled movement, and thrown or ballistic movement. Each of these is employed in every good executant technique.

1. To begin with posture, it may seem strange to class this as a movement at all. Yet obviously from the standpoint of

neuro-muscular control it has all the characteristics of movement. Postures are always held by setting up certain muscular strains and counterstrains. They are subject to typical muscular fatigue. And usually, as a matter of fact, the appearance of absolute immobility is misleading. Much nonsense is talked about posture in music teaching, and the best way to dissipate it is by a straightforward scientific account of the part played by the posture-movement in motor skills.

Furthermore, we must recognize two kinds of postural movement. First, we have the type of rigid posture, where the limb is held in position by the balanced pull of the antagonistic muscles. The most obvious instance of this is furnished by holding the arm horizontal from the shoulder against the pull of gravity. Second, we have the free postures, where the limb rests on a point of support outside the body, or else hangs freely from a point of support within the body, as when the arm hangs vertically from the shoulder. The distinction between rigid and free posture is by no means absolute, however, because entire and complete muscular relaxation is rarely possible.

Here we have the scientific basis for an understanding of the place of posture in executant technique.

A. First of all, it is evident that what is important is the type of neuro-muscular control involved in a posture, rather than its external conformation. Always the aim should be to have free postures; and the particular disposition of the limbs is then a matter of decidedly secondary concern. In violin technique, for instance, there is considerable debate as to just how the fingers of the right hand should be disposed about the stick of the bow. But this is really unessential. What is quite essential is that the hand posture shall be as free and mobile as possible. The same principle holds with vocal

technique — where freedom rather than the holding of some particular pose is important — and also with piano technique. From the standpoint of outer conformation and the disposition of the limbs, there will be many postures, all about equally good. The real heart of the matter is the condition of the nerves and muscles.

B. The reason why free posture is so desirable is that free posture movements facilitate the beginning of motions of any sort in any direction. If a posture is being maintained with considerable neuro-muscular strain, it is much harder to go from it instantly in any required direction, which of course is precisely what we want to do in actuating an instrument, or in managing the vocal apparatus.

C. Once we grasp the point that posture is really a type of movement, we are not likely to fall into the error of so many teachers of vocal and instrumental music, and make a sort of fetish of position. Posture is simply a neuro-muscular condition from which we go, and into which we return. It is not really the same thing as *pose* — that is, the accurate and deliberate conformation of the limbs in a particular pattern. In this sense, indeed, there is no such thing as posture in executant technique. Actual posture is extremely plastic and evanescent. And always the crux is neuro-muscular freedom.

2. The next kind of movement we must consider is the controlled movement, where the limb moves more or less slowly along a path over which it is directed from point to point by neuro-muscular guidance. Legato bowing on the violin is a good instance of this. We need to understand something first of the nervous and then of the muscular conditions under which such movement is controlled.

To begin with the nervous control, it is of course quite familiar and evident that controlled movements are started and guided by impulses from the motor nerves. Not so

familiar, but exceedingly important for the analysis of technique, is the fact that the motor neural impulse is intermittent. It does not flow down the nerves into the muscle tissues in a continuous stream, but it alternates, like the electric current in an ordinary lighting circuit. The nervous current comes down in jolts, as it were, with an intermittent rapidity that varies with different people, but that is probably never faster than ten per second. Thus we see that any controlled movement will not be continuously controlled along the whole of its path, but will be controlled at the most not more than ten times per second. The significance of this will be made clear later.

Turning now to the muscular factor, we must understand that even with the simplest controlled movement, at least two muscles are always in operation. A movement of the arm may be brought about by a contraction of the flexor muscle — but it also involves the automatic release of the extensor. For clearly if flexor and extensor both pulled together, motion could not take place in the limb. As a matter of fact, there are usually many sets of muscles involved in the kind of complex controlled movements used in music, but we need not go into this point except to mention it. Now it is here that we discover the difference between stiff and free controlled movements. In stiff, rigid movements, the negative pull of the muscles that would oppose the movement has not been wholly eliminated, while in free movements, there is practically no antagonistic pull at all.

Now it is very clear that the freer the controlled movement can be, the better. There is not the slightest use in trying to drag the limb against the tug of opposing muscles. As a matter of fact, a great deal in the development of motor skills of all kinds — including skills not concerned with music at all — consists simply in learning to make our movements as

free as possible. Specifically there are three good reasons why the free movement is better than the stiff movement. First of all, the free movement is far less tiring, because little opposing muscular pull has to be neutralized. Second, it is likely to be more accurate. And third, it is easier to go from one free movement to another than from a rigid movement to another, just as the free posture favors succeeding movements.

In the technique of every instrument, and also of the voice, we use more or less controlled movement, the outstanding instance being violin bowing. And always the point is to make such movement as organically free as we can.

3. We come now to the ballistic, or free-thrown movement. Physically it differs from the controlled movement in that the limb is literally thrown through its course, and is under control only at the beginning and the end of its trajectory. From the neural side we may explain it as follows. Suppose we take a controlled movement of the wrist, and speed it up little by little. Let us say that at first we make the movement in one second — then it will be under actual nervous control about eight or ten times in its course. But now, let us speed it up gradually to the limit, until we are making it in one-tenth of a second. Now it will only be under control once in its course — that is, at the beginning — for the simple reason that the whole movement takes place in between two beats of the intermittent nervous impulse. In motion of this kind, the limb is literally thrown through its course, and is as essentially free from control as a ball thrown through the air. For the moment, the moving parts simply swing free. A ballistic movement may be stopped by the pull of the ligaments, as with a golf or tennis swing. Or it may be checked by some external obstacle, as with a motion checked by the key-bed of a piano. But always its essential characteristics are its high speed, and its complete freedom.

In every high-grade motor skill, including the technique of musical instruments, ballistic movements are exceedingly important. They provide us with just what we want for skill — namely, a combination of accuracy, rapidity, and endurance. In games such as golf and tennis, everyone knows very well that the freer the movement, the higher the chances of accuracy — always what is wanted being to let the moving limbs swing free rather than to control them at many points along their course. The ballistic movement, too, by its very nature is a rapid motion — a snake's strike is one of its best exemplifications. And the ballistic movement makes for endurance because it is set off with the maximum economy of nervous discharge and muscular tension.

On the purely motor side, executant technique involves the organization of these three types of movement under the best possible conditions. This in itself throws considerable light on the pedagogy of technique.

A. We have here the real clue for the much discussed and much misunderstood doctrine of relaxation. Many teachers seem to suppose that tension takes place in the joints, whereas it is to be referred to the muscles. When a pupil manifests a "stiff wrist" or a "stiff throat," what actually happens is that he is using the wrong kind of movement. His postures are rigid postures; his controlled movements are made against resistances; and he probably has few ballistic movements, or none at all. We should not, then, tell him to "loosen his wrist" or "relax his throat" — we should try to change his movement-habits themselves, for this is where the trouble lies.

Still further, many teachers try to insist that relaxation in executant technique should be absolute, while yet it is perfectly obvious that some tension is essential in playing any instrument. A good instance of the confusion of mind pro-

duced by a wrong understanding of the nature of tension-relaxation, is the remark by a distinguished piano teacher that some stiffness in the wrist is allowable. This, of course, is a supreme truism, the point being that tension-relaxation is not a condition of the wrist, or of any other joint in the body, but of the muscles. And while the vigorous movement needed for a fortissimo certainly must be started off with considerable muscular energy behind it, yet it should be a free movement for all that. As a matter of fact, we simply cannot diagnose the tension-relaxation state of the muscles during a movement by stopping that movement and feeling the moving joint — yet this is an absurdity committed by many a music teacher.

B. Our whole account goes to show that technique does not depend so much on muscular strength as on muscular skill. It has been demonstrated that the chief advantage of the trained athlete is not his superior muscular strength, but his ability to perform movements with an extreme economy of effort. This finding ought to be known to every teacher of instrumental and vocal music, for often we find exercises assigned with the idea of building strength, when always what is needed is free and economical movement. Alleged muscle-building exercises can be particularly dangerous on the piano, and many students have come to grief in using them. To take a specific instance, the effort to equalize the fourth finger should not be thought of as an effort to build large muscles there, or even to loosen the ligaments, but to establish skilled and free coördinations at an awkward angle.

C. Lastly, we see that formal technical exercises should always aim, not at practicing tricks and stunts which can be learned just as well when they are encountered in compositions, but at helping the pupil to develop the proper types of movement.

EXECUTANT TECHNIQUE: III. APPLICATIONS

We now turn to a brief discussion of the application of the ideas developed above to the technical problems of the piano, the violin, and the voice. Of course, it is quite out of the question to present a thoroughgoing analysis, and all that we shall do will be to show in a general way how movement-analysis applies to these three fields.

1. Piano technique chiefly utilizes ballistic and postural movements, though some controlled movements are also involved. The ballistic movements are made with the fingers, the hands, and the arms, working separately or in combination. They may be either vertical or lateral. They may begin above the keys, or at the key level, and normally they are taken up by the key-bed. Always the essential point is not the conformation or the trajectory of the movement, but its neuromuscular type, skill demanding that the movement be free-thrown. The development of ballistic movements of this type is the secret of high speed, of accuracy both in striking the key and in dynamic shading, and of endurance. The postural movements are remarkably fleeting and plastic. Sometimes they are made on the key-bed, when a legato without the pedal is desired. Less frequently they are made at the key level. And more often they are made above the keys. The use of the pedal favors the formation of free postures above the keys, the hands hanging from the wrists, supported by the upper arms, the pedal sustaining the tone. Almost always the posture should be as entirely free as is at all possible.

This simple account at once explodes many fantastic but not uninfluential theories of piano technique. (a) First there is the theory that it is necessary to press hard on the key-bed. The objection to this is that it involves the formation of stiff postures at the key-bed, thus compromising succeeding movements, and leading to fatigue, and all for no purpose, because

clearly nothing we can do at the key-bed can in any way affect the tone once it has been formed. (b) Then there is the theory of "weight playing," given currency by Matthay, which consists in the claim that we actuate the keys by the mere weight of the limb. The sufficient reply is that there is not weight enough in the finger to actuate the mechanism at all without a very long drop, that there is not weight enough in the hand to produce more than a *piano* tone when dropped from any reasonable distance, and not enough weight in the arm to produce more than a *mezzo-forte* in single notes. In no case would we have sufficient weight to play chords of three or four notes. Of course what actually happens is that the members are *thrown* against the keys, and the underlying truth of the idea of weight playing is that the movement must be free or ballistic. (c) Then there is the dictum that all movements used in playing the piano must be curves. No reason is given for this, and indeed there is none. Again we insist that not the shape of the movement, but its type is what matters. (d) Lastly, though it is not entirely relevant here, we may mention the extraordinarily persistent, but quite preposterous, idea that timbre can be modified by different kinds of attack upon the keys. The simple and sufficient answer is that this is a sheer physical impossibility, due to the nature and construction of the instrument.

All in all, then, the secret of effective, musically intelligible pianism is simply to make each rhythmic group a free movement unit, subdivided from other movement units by free plastic posture-movements.

2. From the standpoint of movement types, violin technique presents a sharp contrast to the technique of the piano. To be sure, the violinist's left hand concerns itself chiefly with postural and ballistic movements. But the basis of bowing technique is the controlled movement that is used in legato,

or the production of the so-called *son filé*. It is true that many types of bowing do in fact involve ballistic movements of various kinds. This is true, for instance, of the *staccato volant*, the *spiccato sautilé*, and of course, the *tremolo*, to mention only a few cases. But with this instrument the central technical problem is the mastery of a controlled movement. Now from the point of view of our previous analysis, it is clear that the essential thing is to make the legato bowing movement as free from all counteracting muscular drag as is at all possible. What we want to do is to develop this *type* of movement. Its advantages are already familiar to us. A free controlled movement is more refined and lends itself to a nicer direction than one that is stiff. It is possible to pass much more readily from a free controlled movement to other movements — as for instance the ballistic movements just listed — than if the free movement is stiff and heavy. And free movement always tends to minimize fatigue.

Once more, what matters is really the type of the movement rather than its outer configuration. So long as the bow is properly applied to the strings, and so long as it is being manipulated with great muscular freedom, the whole violin-playing mechanism is working in a proper manner. In just the same way, the essential need is for free plastic postures. Much controversy has centered about the postural control of violin technique. The precise pose in standing, the precise mode of holding the instrument, the conformation of the right hand upon the bow, and the fixation points above the wrist have been made matters of considerable debate. As is so often the case, these discussions of posture very generally tend to miss the main point. What is important is not the outer conformation of posture but its inner, neuro-muscular control. Any posture that is free and plastic, that is not fatiguing, and that does not compromise succeeding movements, is technically

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good, always assuming, of course, that it in no way dampens the resonance of the instrument, as do some methods of holding.

3. Controlled movements occur in vocal technique mainly in connection with the management of the breath. Breath control, however, is a far easier problem than some singing teachers make it, and the real crux of vocal technique is the management of the muscles of the vocal box. Here it is necessary to develop ballistic movement almost entirely, although in *portamento* a controlled movement takes place. When the proper types of movement are not developed, we have throat stiffness, and bad tone-production. When ballistic movements are being employed, we have a sound basis for building agility, and also we save fatigue through economizing effort.

This simple point — the development of the proper type of free-thrown movement in the laryngeal muscles — is really the whole story, or very nearly the whole story, of vocal technique. It at once disposes of all that array of complicated and untenable fictions upon which some voice teachers insist. For instance, it shows that there is no real difference between vocal placement and vocal technique, for the “well-placed voice,” is simply the muscularly free voice, and this is the foundation of all agility. Again, it leads us to ignore the really astonishing collection of nonsensical ideas that have been grouped about the so-called doctrine of breath control — many of which posit sheer physical miracles. The only breath control a singer needs — and all he can have — is the controlled movement of the respiratory muscles, which are made to synchronize with the phrase rhythms of the music. Again, we are led to ignore the whole intricate and miraculous theory of resonance, in which it seems to be assumed that “chest resonance” can be switched off and on at will. (Incidentally the chest is not a resonating cavity at all, any more than the

stomach, though indeed some singers do talk about "stomach notes.") And finally we pass over the notion of vocal registers. The only truth here is that the timbre of the voice alters at different pitches, due to varying conditions of production. Except for this, there are no vocal registers at all.

So again we see that the essence of vocal technique is free movement. When this is attained, the voice becomes agile, it gives the sense of proper placement to the hearer, and we have that sense of ease and pleasure in listening which is possible only with a free, rhythmically coördinated technique in the performer.

4. We may close with a passing comment on the problem of vocal technique in the public schools. So long as technique is assumed to mean placement, posture, proper resonance, proper management of registers, and the development of agility, the public school music teacher is extremely well-advised to let it severely alone. But if it is taken to mean the free, natural production of good tone without laryngeal strain or effort — everything being geared to musical ends, and all movements synchronizing with the rhythms — then indeed the teacher may inculcate the essentials of technique. For the greatest of singers build on no foundation other than this.

With little children, the proper pedagogy of vocal freedom is imitation. That is, they should be led to imitate good tone, and when they have succeeded, they will have achieved the proper vocal action. This, of course, implies that the teacher has an expertly developed auditory ability, so that she can judge from the sound whether the proper action is or is not taking place.

EXECUTANT TECHNIQUE: IV. THE USE OF THE EYES

In closing this discussion of executant technique it seems well to touch on the little discussed subject of eye control. What we have to say here applies especially to pianists.

For the pianist, eye control is a decidedly important factor. It is always worth while to watch how a pupil uses his eyes — whether he tends to watch his left hand or his right, to what extent he tends to watch the keyboard at all, whether his eyes roam free while he plays. Unfortunately there are no experimental studies on the point, but what we know of touch-system typewriting applies in part, and gives us considerable insight.

The term “touch-system” is somewhat misleading, for the very best typists, who hold world’s records for speed, do not, as a matter of fact, totally eliminate the visual element. They do not watch the keyboard all the time, but when fully extended, they do give it occasional fleeting glances, which yet are extremely important. Their records when blindfolded do not quite equal those made with eyes uncovered.

Our conclusion is that the correct use of the eyes in the great motor skills which turn on eye-hand coördination is to employ them with great economy. It may certainly be possible to do without vision altogether. We have the classic instances of great pianists continuing to play when the lights failed. But there is nothing gained by this entire elimination. If we have eyes, why not use them? To be sure, the need for intense, continuous scrutiny is a weakness, and if we find this in a pupil it may be wise to insist on his practicing without looking at the keyboard. But this is merely for the purpose of development and training. The device of making the pupil enter into casual conversation or look at pictures while playing is to be condemned, for it breaks up the habit of concentration without which worthy performance is impossible. We economize eye movement, not to enable the pupil to read a story or discuss a problem while he plays, but to set him free for a more intense concentration on musical meaning. As a matter of fact this is the one outstanding advantage in playing from memory.

CHAPTER IX

TRAINING FOR COMPOSITION

The power to compose music is the third great functional outcome of musical education. It depends on building up a command of the musical medium and all its resources sufficiently flexible and perfect for the imagination to operate with it, without let or hindrance. In many ways learning to compose music is like learning a foreign language. We cannot claim to have a perfect command of French if we can do no more than read it. Our command is not perfect even though we can write and speak it, so long as we find it necessary to think out what we have to say in English, and then translate it. The final development is only reached when we are able to do our thinking in the medium and idiom of French itself, so that our ideas and meanings embody themselves directly in the foreign language. So also with music, our power over it is not complete until our ideas and intentions can find direct embodiment in and through it. And this is the skill of the composer.

It may seem strange even to suggest that we should try to train music students to compose music. No doubt this is partly because many students are so ill-trained that they can hardly put together a simple four-part harmony or improvise a modulation. And partly it is because to many laymen the act of composing music seems to partake of magic, and they do not understand that it simply results from the perfect drill and discipline of those mental skills which we analyzed

in the first part of our discussion. Yet there is nothing more certain than that no scheme of musical education is adequate which does not definitely aim at training the musicianly qualities on which the power to compose depends.

TRAINING FOR COMPOSITION IN RELATION TO GENERAL MUSICAL EDUCATION

Of course, it must not be imagined that we claim that every music student can be trained to the point where he can write a worthy musical work. Nor do we argue that certain very valuable musicianly outcomes are impossible where such perfect command of the musical medium is not to be found. The singer, the violinist, the pianist, each can offer the sort of performance one would demand from an excellent musician without the highly developed kind of training he would need to be able to write music of worth. The organist, it is true, needs a greater command of the medium, because his instrument lends itself to polyphonic exactitude, but even he need not be a skilled improviser or composer. And one may certainly build up the capacity for musicianly listening without being able to create any of the effects one enjoys.

Our position can best be made clear by following out the analogy between music and French. Perfect command of French means that one can actually use it as a direct medium for thinking. But less complete mastery may still be very valuable indeed. One may benefit greatly from knowing enough French to be able to read it with fair ease. One may benefit still more by being able to translate English into French readily enough to be able to make one's self understood in writing or in conversation. These abilities may be regarded as stages in the way to perfect command, but still they have values in their own right.

So also with music, a command of the medium not perfect

enough to enable us to write a complex composition, or to extemporize at length and well, is from one point of view no more than a stage of a development that is not complete. And yet it may, and in fact does have large values. So we may put the matter as follows. Every serious student of music should be trained in the direction of full and complete power to compose music. He may or may not bring his mastery of the medium and its idiom to final perfection, but the intermediate stages of his development will still have great value as elements in his musical development, and as aiding him to other types of musical self-expression.

1. For the listener, some insight into the structure of music is exceedingly valuable. Without it, his intelligent grasp of the composition will always be uncertain and weak. And his response in the way of feeling will be somewhat doubtful and inexpert, because he will not clearly apperceive the beauties which the composer has built into the texture of his work. Such insight is commonly given in the better-organized courses in musical appreciation.

2. The performer needs a more thorough and precise comprehension of the musical medium, because he is less merely receptive and is more creative than the listener. All his work must be directed toward a musical goal. That is, he must always seek and try to express the composer's intent. And he cannot understand this unless he has some grasp of the musical medium itself. The old-fashioned courses in harmony and counterpoint were not very well adapted to giving the performer the kind of analytic skill he needed, and to-day we are witnessing the development of keyboard harmony to meet this requirement.

3. The ultimate aim of all teaching of theory, harmony, counterpoint, and form should be to set up a command of the medium sufficient for composition. Students who fail to go

all the way should properly be regarded as having left something incomplete in their musical equipment. But the independent value of the intermediate stages should be recognized, and allowance made for them. In passing we may say that there is nothing visionary in definitely trying to teach music students to compose artistically worth-while music. If the teaching of "theory" is really not regarded as a theoretical or formal subject — if it is all pointed toward a musical outcome that students can recognize as worthy of attainment — and above all, if it follows the lines indicated as proper by what we know of the psychology of sound, music psychology, and the psychology of learning — there is no reason why students should not have the satisfaction of being able to write creditable compositions within a reasonably short time from the beginning of their course.

These points fairly sum up what we would regard as the valid aims in training for skill in musical composition and its relationships to general musical development. We are now to pass on to a consideration of how they may best be realized.

A CRITICISM OF THE TRADITIONAL TEACHING OF HARMONY AND COUNTERPOINT

In the "classic" texts, harmony and counterpoint are always presented as deductive sciences. That is to say, certain rules or formulæ for chord progressions, for the resolution of various discords, and for the treatment of two or more simultaneous melodies are laid down, and the task for the student is simply to gain skill in applying them. It is often argued that this kind of study is necessary for thorough musical training, and the example of the great masters is cited in its defense. It is pointed out that almost all the great composers went through a long and exacting period of drill on material of this kind, that where this is not done, even the work of a genius shows

the lack of it, and that any worthy efforts at composition are bound to be stultified if it is not faithfully carried through. Our answer is two-fold. First of all, the great composers usually lived in an atmosphere of music from youth up, so that they brought to the formal study of harmony and counterpoint a musical background such as very few even of the best conservatory students possess; and of course they had a natural aptitude for the medium which made every rule, even the dullest, luminous with musical meaning. To argue from such examples to the training of the ordinary student is certainly a fallacy. Second, it is probable that the elaborate formal drill actually wasted a good deal of time even for the great music masters. Merely because they went through a certain course of study which was universally accepted as proper and traditional does not prove its value.

Let us pass on now to enumerate our criticisms of the formal study of harmony and counterpoint.

1. The procedure is in the purest and most abstract sense deductive. The mental processes involved are almost precisely the same as those called for in the older-fashioned textbooks on mathematics, where formulæ were laid down and sets of examples of their applications given. In many such harmony texts no serious attempt is made to show the æsthetic appropriateness of the rules, and very often the teacher makes no supplementation along these lines. This kind of presentation is now recognized as pedagogically unsound. To the student, a rule so stated means nothing concrete. It corresponds to nothing in his own experience. It is simply a system of symbols, and his only interest in using it is the puzzle-solving interest. Generalizations and rules should always be taught in terms of the pupil's actual present experience, or otherwise they will almost certainly fail to function.

2. The musical meaning of the rules is often extremely

obscure. It is true that the texts usually advise the student to cultivate the power of inwardly hearing the correct progressions. But this is a mere incidental comment, rather than what it ought to be — the working basis of the entire presentation. Without this it is not too much to say that the study ought to be classified with mathematics rather than with music.

Two specific examples of the musical obscurity of the formal rules may be cited. (a) First consider the rule against the forbidden consecutives. The student is told never to write consecutive fifths, fourths, octaves, or unisons. But he finds that all instrumental composers use such progressions all the time. And he is told that they are intolerable in choral music, and that he is supposed to be writing four-part harmony for a choir. That is, he is being drilled to apply a rule which has simply no direct meaning in terms of his musical experience. (b) The student is compelled to drill on rules for "strict counterpoint." But he finds that even Bach himself wrote "free counterpoint." In other words, he is learning rules that have strictly no musical meaning at all.

3. Formal harmony and counterpoint are not aimed at developing in the pupil a command of the musical medium by the simplest and most direct means, and in the shortest possible time. No doubt they represent the formal structure of modern music. But the logical basis of a subject is one thing, and the psychological approach to it quite another. They are not pointed toward the musical outcome of effective composition. It is precisely like approaching a modern language by the most elaborate and abstruse study of its grammar, taking up many rules which are rarely or never used. One may labor with such material for years, but never learn to speak or think in the language. And in the same way, a student may labor with formal harmony and counterpoint

for years, and at the end of it all, be utterly unable to write a respectable musical composition.

4. If formal harmony and counterpoint are not attuned to the ultimate aim of building skill and power in composition, they are still less so to the proximate aims we recognized — increasing the musical intelligence of the listener and the performer. For the vocal, or pianoforte, or violin student, their benefits are negligible. One would often gather from the standard old-fashioned textbooks that their authors knew of no other means of producing music except unaccompanied choral singing in two, three, four, or five parts. And the real needs of developing musicians are simply ignored.

We should always bear in mind that the values of any subject are determined wholly by its working, functional results. Tradition, uncritically accepted, has been the dead hand in education before to-day, and it is so in musical training at the present time.

VITALIZING THE TEACHING OF HARMONY AND COUNTERPOINT

The teaching and study of harmony and counterpoint may be vitalized by linking them closely to their natural musical outcomes, both ultimate and proximate.

1. Training for effective listening in general, and work in musical appreciation in particular, offers opportunities for the teacher of harmony and counterpoint which, though limited, should not be ignored. When the beauties of a passage have been admired, it is legitimate to enter into some explanation of how they are produced. The transitions of harmony, and the contrapuntal dexterities, may be analyzed and explained. This process may be carried on as far as seems desirable or possible in view of the interests and capacities of the students. With an audience of laymen, of course, not much can be done.

But with serious students, something of real value can be accomplished. The clear advantage is that by this means the rules of harmony and counterpoint are exemplified, not as abstract formulæ, but inductively and functionally. They are recognized as basic for musical results whose beauty has been a source of pleasure. And an understanding of them is seen to be of value for comprehending and appreciating the musical work. This has two valuable educational results. First, it tends to make the student desire to follow up the study of harmony and counterpoint, because he perceives that they contribute directly to his musical development, on which, of course, his skill as a listener depends. And secondly, it enables him to apprehend the rules as formulations of æsthetically desirable results rather than as quasi-mathematical canons arbitrarily laid down.

2. Training for musicianly performance offers far richer opportunities for the theory teacher. Technique, as we have seen, is inseparable from musical aims and results. In working up a composition for performance, we do far more than develop a set of motor skills. We develop musical insights and appreciations which are the guides and criteria of those motor skills. The good teacher of executant music should always require a very painstaking study on the part of the student, to determine how the composition ought to sound. He must analyze its melodic treatment, its harmonic content, and its general plan. And he must certainly understand its various key-transitions. Otherwise his rendering will not be musically well-founded.

Now analysis and study of this kind clearly involve both harmony and counterpoint, and also musical form. So here again the student sees the rules actually applied in a musical medium. He comes to recognize cadences when he sees them. He senses the resolution of dissonances and the progressions of

the accompanying harmonies. He traces the involution of the fugal subject and counter-subject. He examines the varying treatment of the melodic ideas. And the point is that he must do these things and gain these insights, not because some book lays down arbitrary rules saying that chords and melodies should be treated in such and such a manner, but because if he fails, his musical outcomes will at once be weakened. That is, he is introduced to the material of harmony and counter-point in the correct psychological manner — in terms of music, and in response to felt needs.

A student so trained can hardly fail to experience some stirrings of desire to know more about the structure of musical beauty. And he will have an apperceptive background for approaching that study in terms of musical meaning.

3. The ultimate aim of the teacher of "theoretical music" must be to produce skill in composition. Short of this he cannot be entirely satisfied. He may contribute to genuine musicianship by relating his work to courses in appreciation and to lessons in "applied music." But beneath and beyond all this, he is really trying to build up in students a command of the medium so perfect that it becomes for them a native language, an easy means of expression, flexible to all their wishes and notions. If he presents his subject merely as a series of quasi-grammatical or quasi-mathematical puzzles, then he has a field deader than the deadest language. If, on the other hand, he regards it as a training in the exacting technique of living beauty, it will live both for him and for his students.

Students so taught will feel themselves consciously approaching a functional and fascinating goal. Through the various stages of improved power to listen intelligently and appreciatively, and to play with growing discrimination, they move toward that perfection of command where any musical ideas

they may possess can find ready and effective utterance. Of course, we cannot teach any pupil to compose great music merely by giving him the proper approach to harmony and counterpoint, any more than Greek grammar, properly presented, will enable him to write an Iliad. But within a few years we can surely bring him to a stage where anything he has to say can be said. This much we can promise him, and he will feel the promise being progressively fulfilled as his training advances.

CORRECT STEPS IN THE TEACHING OF THEORETICAL MUSIC

Without wishing to dogmatize unduly, or claim any final perfection and truth for our analysis, we may now present what seem to be the suggestions of the experimental work in the psychology of sound and music psychology for the proper teaching of theoretical music. The pupil, in his development, must be led through a series of stages, culminating in full and final grasp of the musical medium, so that it becomes for him an easy and natural means of expression.

Before outlining the various steps in question, there are two cautions to which attention should be called to avoid possible misunderstandings. (a) The stages are not chronologically separable in any clear-cut manner. They are stages in psychological rather than sequential development. One does not begin precisely where the other leaves off. (b) At every stage the pupil's development should be motivated and fed by the analytic study of the compositions he is studying. For instance, if he is working on a Bach fugue, he may have before him the living, musical exemplification of contrapuntal rules whose abstract formulation he will not be taught for some time. This does not matter. Mental grasp does not increase in any cut-and-dried, schematic order. What we want is a feasible and effective plan, based on sound

psychological principles, for building up his command of the musical medium. And we certainly should not hesitate to capitalize his actual musical experience all along the line.

1. The first stage of development is clearly to build up the pupil's grasp of tonality. The supreme importance of tonality we have already come to recognize in studying the purely auditory side of the musical experience. A person who cannot hear tonality cannot hear music. His sense for intervals and for melody, and his apprehension of harmony and harmonic relations, is bound to be uncertain.

Both the schools and the studios may and should coöperate in building the pupil's grasp of tonality. For both, the drill material is essentially the same — that is, the scales. In teaching music in school it is perhaps more essential to develop the scale out of the song or musical composition than is the case in the studio, where pupils are selected, and able to tolerate more in the way of formal drill. Solfeggio, too, is an excellent device that the schools can use, but that is hardly available for the instrumental studio. But apart from accidental procedural difference, the essentials of training tonality remain the same.

The pupil should study scales, not only for the motor skill needed to play them smoothly and certainly, but also because they exemplify tonality in its purest form, and constitute the basis of all the tonal relationships of modern music. He should build the scales for himself, and not merely practice from the score as given in some book of exercises. Above all, he should learn to listen to the scales as they are slowly played or sung. Moreover, there is no one arbitrary and controlling order in which the scales should be learned. The usual progression from tonic to dominant is only one of the key relationships which should be ingrained in early musical experience. In taking up compositions or songs, it is well to build the scale

of each key into which the work modulates, as soon as the pupil's development makes this possible. And based on this practice of hearing and grasping the scale, some work may be done on skips and learning the sound of the diatonic and chromatic intervals.

Teaching of this kind is clearly possible either through the agency of the public schools or of the studios. The only difference is that studio work is considerably more intensive, and can be formalized somewhat earlier, though too much formal drilling has always been the bane of studio teaching.

2. Another psychological line of development is training in transposition. Many difficulties here vanish if the pupil has an adequate *musical* training in and through the use of his voice, for transposition is only technically difficult on instruments with fixed scales. Intelligent work in the public schools can here excellently supplement the training given in the instrumental studio. The pedagogical crux for the school teacher is the transition from the relative scale of solfeggio to the absolute scale of the musical score. In a great deal of music teaching for young children, the weakness of an exclusively vocal experience is that they fail to grasp absolute relationships, while that of an exclusively instrumental experience is that they fail to grasp relative positions.

It is precisely this grasp of the absolute and relative elements of the scale that is involved in the power to transpose. It is a valuable accomplishment for its own sake. It facilitates reading, because it enhances the power to perceive at a glance the meaning of the score. But above all, it builds up the feeling for and grasp of tonal relationships.

3. Yet another strand in the psychological development we are discussing is the building of a grasp of harmony. This can be handled to some extent in school in the upper grades, after part singing has been introduced, but instrumental

media such as the piano and organ provide much better means for intensive work.

The need is to have the student make an intensive study of the chords of a single key. He should try out all the chord combinations possible within the key, including the triads and the discords. He should play them, listen to them, image them, and work to sense accurately their relationship to the tonic. He should learn to recognize the peculiar individuality of each chord of the key. (It will be remembered that we have seen good reason to suppose that our experience with each chord is in one sense a unique, unanalyzable experience, so that we directly sense tonic-triad-ness, diminished-seventh-ness, etc.) Next he should take each chord to pieces, and examine its arpeggio. His work and training are not complete until he can recognize any chord instantly, when any of its elements are given, sensing the locus of its base and its relationships within the scheme of the key.

A good deal of time may profitably be given to this phase of the work, along with other factors of training. The student should be encouraged to putter, experiment, dawdle, and "waste time." He should saturate himself in the chords of the one chosen key, until they become unmistakable persons in the musical drama. It is here that we really carry out to its proper length the standard advice to be able to hear the harmony inwardly. And the fact that it is ignored in effect if not in theory is one prime reason for the uselessness of formal harmony and counterpoint.

4. As a natural development from this comes the study of harmonic movement — *i.e.* the transition from one chord to another. This is where the formal rules begin to find use and application, and they should be introduced little by little. It is always all-important that these rules should be taught on a really adequate apperceptive background, rather than as

deductive formulæ. And when the rules are being taught, the pupil's development should never be hurried. It should no more be thought necessary to put him through a certain definite content in a certain time than it would be with his work in "applied music." It is not, of course, a motor skill that is being formed; it is an auditory skill. Nevertheless, his objective remains skill rather than knowledge, and until this has been built up, his further development is not possible.

5. In practically the same way, the ground is prepared for the pupil to grasp the principles of counterpoint and form. His first appreciation of musical form comes when he learns to apprehend the simplest of musical structures, the unitary melody. Both in the studio and the classroom one aim in dealing with beginners should always be to lead them to apprehend the melody. From this it is a direct and natural psychological development to more complex compositions, to dance forms, and to the cyclic forms. Melodic grasp, too, is the basis of polyphonic insight.

Just how these stages of mental development can be fitted into a chronological administrative scheme will vary a good deal with circumstances. All that we can say here is that every well-trained music pupil must traverse them somehow, at some point in his course. Ideally they should be covered while the child is young, and there is no reason, save the stupidity of pedagogues, why they should not be.

It may be remarked that quite early in the course of development we have outlined the pupil should be encouraged to write music as best he can. Attempts to compose will reveal the need of further skill and knowledge more certainly than anything else, and will lead both to the ready assimilation of rules as functioning guides and to the discovery of talent.

A pupil so trained may never make any great contributions to musical literature. No training will ever produce creative

genius. But he will have a very sound and musicianly development, and will possess just the musical-mental skills on which the highest and most commanding artistry depends.

MUSICAL IMAGINATION

There is, however, a somewhat closer and more positive connection than we have indicated between the kind of training that has been recommended and the development of musical imagination. Unless we have skill in the musical medium, imagination itself is practically impossible. It is hard to understand how anyone could do any complex thinking, or follow up any elaborate argument, without the instrumentality of language. Whatever thoughts he might have would surely be very vague, indefinite, and incoherent. And just the same is true in music. If a musically untrained person tries to invent a melody, it is crude, wandering, and more or less inept and meaningless. If he tries to play a pleasing succession of harmonies, he quickly finds he cannot. His musical ideas refuse to flow, and even refuse to be borne at all, simply because he has not the trained mental skill necessary to embody them in sound. Ideas may or may not be the same as their expression, but certainly they are wedded extremely closely to their expression. And so it is that training in the musical idiom is necessary for the free and fertile production of musical notions of any value at all.

PART III

THE AGENCIES OF MUSICAL EDUCATION

CHAPTER X

MUSIC IN THE SCHOOLS

Having discussed the constitution and training of the musical mind and the functional outcomes of musical education, we now pass on to an examination of the agencies through which musical training is carried on. First, we have the music programs which are being worked out in the schools. Second, we have the work of the studio teacher. In conjunction with this we have to discuss practicing. Finally, we are naturally led to a brief consideration of the status of the music teacher.

In dealing with public school music, our emphasis will be to seek to show how the principles underlying all musical training apply under the special conditions of classroom work. We shall not undertake to enumerate or evaluate any set of devices, nor to draw up a detailed course. Many courses and many suggestions for device and procedure are readily available, and what we are to try to supply is a basis for judging them.

GENERAL VALUES OF PUBLIC SCHOOL MUSIC

Musical training in the public schools may fairly be regarded as a new educational agency, so far as America is concerned. It involves many values, of which the following are among the most outstanding.

1. The introduction of music as a serious subject of study in our schools has involved its democratization. Musical culture in the past has been distinctively the privilege of the few. Now it is proposed to make it the heritage of all. And

this immediately means that we have to do very fundamental thinking about the musical mind and its constitution. If we take the responsibility of giving musical training to all the children of the community, it is clear that we are obligated to pick out what is essential from what is unessential and be sure, so far as in us lies, that they leave our hands with the root of the matter in them. So the spread of musical culture implied in public school music means at once that we must decide just what are the fundamental and essential elements in musical training.

2. Public school music teaching has brought about the application of psychological methods and principles to musical education. On this point studio teachers as a body have manifested an extreme conservatism. The public school group, however, tend to take a liberal and open-minded attitude which cannot but affect the whole profession in time.

3. Public school music has definitely raised the problem of the training of the music teacher, though to be sure that problem is far from being solved as yet. One of the great weaknesses of the music teaching profession has been its lack of recognized standards, and the fact that anyone and everyone could set up to teach music without license, let, or hindrance. The introduction of teacher-training standards for the public schools will certainly help to rectify this situation, for there will tend to be a demand that the private teacher be at least as well equipped and have credentials at least as good as those of the teacher who deals with the child in school.

4. Properly organized plans and programs for musical instruction in school provide broad and sound bases for further and more specialized development for individual pupils. Thus we may regard the public school music course as a feeder for the studio. This is brought about in three ways.

(a) Public school music furnishes a contact with music for many children. It tends to arouse interest in music in many who would otherwise not give it a thought. And it may bring to light hidden talent. (b) Public school music can supplement studio training by providing musical experiences which the studio cannot furnish. This is particularly true in the case of pupils working in the field of instrumental music, who can benefit enormously by some rationally organized training in vocal music. In secondary schools, too, opportunities for ensemble work of many kinds often provide a most valuable factor in musical training. (c) Lastly, well-organized programs of public school music act as very fine propaganda for the musical art in general. One outcome should be that music will come to be generally regarded, not merely as a polite accomplishment, but as a subject for serious study, meriting all respect.

FACTORS IN ORGANIZING A PUBLIC SCHOOL MUSIC PROGRAM

In setting up any program of music teaching in the schools, the following considerations should be kept in mind as basic.

1. Teachers and supervisors need a solid grasp of the principles of musical education rather than a rule-of-thumb method. In spite of the bewildering multiplicity of opinion that still exists, there are now some signs of an approach to unanimity as to the course of music study that may profitably be followed, due to the labors of the national organization of public school music supervisors. But valuable as some concrete understanding on this point may be, we should understand that no formal course of study is enough properly to control a situation. For this there are two reasons.

A. There is no one, unique, right procedure in musical instruction. It is, for instance, futile to argue the point of introducing the musical score in the first, second, or third

grade. This will vary in different situations. The constants of the situation are not procedures but principles, and a good administrative scheme is simply one built squarely on right principles. This is one reason why we insist that teachers and supervisors urgently need a grasp of principle.

B. Then secondly, no course, not even the best, is ever fool-proof. The very best course taught purely in terms of procedure and method — taught, that is, in terms of *how* rather than *why* — will certainly degenerate into formalism in the hands of poor teachers. Having learned a certain procedure they stick to it as right and proper in circumstances which obviously call for its modification or abandonment. The only way to make our work fool-proof is to eliminate folly in the teachers. And the only way to do this is to instruct them in the functioning principles underlying all they do. Devices and procedures can be invented. Principles remain eternal.¹

2. The second fundamental consideration in public school music work is that teachers and supervisors must always be sure that their work is really aimed at teaching *music*, and is really hitting the mark. The reason why the old-fashioned chorus singing fell into such disrepute, and bored pupils so extensively, was precisely that it was music-teaching in name, but not in fact. To be certain that a course is a course in music in fact as well as in name, two things are necessary. (a) Supervisors and teachers must be sure that the mental functions which are being exercised are those which constitute the basis of musicianship. (b) They must also be sure that the procedures adopted work always toward the functional outcomes of musical education — that at each grade the pupils are being led definitely and assignably nearer the

¹ For suggestions on devices *vide* items in bibliography by Farnsworth, Giddings, and Giddings and Baker.

ability to listen well, to execute well, and to compose well.

3. The last essential for public school music work that it seems worth while to mention here is that both supervisors and teachers must possess trained musicality. This does not, of course, mean that they must be expert executant artists. But it does mean that they must be able to hear music well, to respond to its rhythm exactly, to understand it clearly, and to feel it justly. Nothing is more absolutely hopeless than to have music taught by non-musical people. The reason is that here, unlike most studies, the standards of judgment and achievement are all subjective to the teacher. And if she has not sufficient trained musicality to possess high standards, she simply cannot teach musical achievement at all.

THE FIRST SIX YEARS OF MUSICAL TRAINING: I. THE CENTRAL AIM

The first six years of musical training in school should be organized about the technical achievement of sight-singing from the musical score. This should be the central aim. The statement is put forward here in a dogmatic manner. Full reasons for it will emerge when we come to discuss the educational values which flow from this procedure, and to show how it furthers musical training. For the moment we may merely remark that the schools present an excellent opportunity for a scientific treatment of the pedagogy of reading music.

We have already shown that skill in the reading of music depends on the development of the proper eye movements. The eyes must move in such a way that units of meaning in the script or score are grasped at a single glance, in which, to be sure, all detail is not clearly seen, but everything is inferred in an orderly manner from what is actually seen. Further-

more, we have seen that the basis of proper eye movement is the power to apprehend meaning — that in the first instance we train eye movement *indirectly* by building the power to grasp meaning swiftly. Thus it is that the teaching of reading is not aimed at any isolated technical stunt. Properly understood and organized it involves the planned building of musical experience and instruction in musical meaning.

Taking up the matter from another angle, we may say that the musical score has two aspects. On the one hand, it is an organization or symbolic crystallization of musical experience, just as the technical terminology or symbolism of any field crystallizes the actual concrete experience in that field. On the other hand, the score is a convenient agency for dealing with and regulating the concrete musical experiences of the pupil, and it can and should introduce into music the sort of order and compactness that algebra can introduce into the realm of quantity. So in the first six years of school training in music there are two natural divisions. First the pupil must learn the score by a proper organization of the musical experiences needed to make it intelligible — that is, by building up its apperceptive background. Then he must use the score in order to improve his musical grasp and accelerate his musical progress. It should be noted that these two divisions are in essence psychological rather than chronological. Just when the score is introduced is to some extent a secondary matter, and depends on convenience, opportunity, and the kind of devices that are used, though we may say that it should not be later than the third grade. But what is quite essential is that it should be introduced with a proper psychological background, and that afterward it should be employed for the furtherance of musical experience.

THE FIRST SIX YEARS OF MUSICAL TRAINING : II. MUSICAL-
MENTAL FUNCTIONS TO BE ORGANIZED

To repeat, the task of the first six years of musical work in school divides naturally into two parts; first, learning; and second, using the musical score.

1. To begin with the business of learning the score, we have insisted that this cannot be treated as in any sense an isolated "stunt," but rather that it depends upon an outgrowth of organized musical experience, which constitutes the apperceptive background of the musical symbolism, and gives the score its meaning.

What elements of experience, then, must be organized in teaching pupils to read?

A. Everything must begin with the rote singing of suitable songs. The point here is to start musical education with complete though rudimentary musical experience, out of which separate and special elements may be selected for particularized training and drill. Some of the major implications in the use of rote songs for this purpose are the following. (a) The first directed musical experience of children should be that of singing with enjoyment, so that a proper approach is made to later technical drills. (b) We always desire to stress musical meaning, and this can be done in a number of ways. The use of words fitting the melody is a most helpful device here, and it is safe to say that melody and words should be taught together in the lower grades. (c) The children should always be led to sing with the best possible tone and expression. In the vocal work of young children, good tone and good expression go together, for good tone is *appropriate* tone, expressive of the mood of the song. We should note that there is no need to make a fetish of *mezzo voce* as some teachers do, for in some songs this would be highly inappro-

priate. (*d*) In the early grades, wrong notes should be corrected afterward, rather than avoided by preliminary drill on difficulties. The reason is that our aim is to teach the total significance of the melody. Errors should be grasped as breaks in the melodic meaning, and only rather advanced pupils can do this unless the melody has been tried over a few times.

From this experience with rote songs we analyze out the various factors calling for special drill and attention.

B. First we take the analytic study of melodic direction; that is to say, we call the attention of the class specifically to the direction of the melodic curve as a whole. Various graphic methods calling for the use of the blackboard readily suggest themselves, the point being to give the children a rough idea of melodic direction before introducing them to the precise symbolism of the musical score. Or Giddings' method of pointing at the notes of the score may be employed. Or again, we may employ a certain measure of individual instruction. It is here that we meet with the problem of the so-called monotone, the child who cannot grasp, or cannot sing, the melodic outline. The failure of the monotone is almost always a failure of mental grasp, and should be attacked as such. He should be led to visualize the melody by graphic methods, or to grasp pitch in terms of consonance and muscular sense by sliding the voice up or down to a pitch held by the class. A psychologically intelligent attack upon the problem of the monotone almost always yields a satisfactory solution. Throughout this whole part of the work the aim is to separate out melodic direction, and to sensitize the children's minds to it.

C. Next we take the analytic study of rhythm. Here the crucial point to remember is that rhythm means muscular coördination to the music. This is essentially what we try

to teach. Beating time will give the *Takt*, but we must teach the phrase-rhythm in terms of breathing. Various graphic representations of the rhythmic pattern have been worked out, and may be used with success. The various suggestions already made on the pedagogy of rhythm apply here.

D. Next we separate out the study of tonality, or the key-relationship of tones, and here we use the scales as drill material, following the procedures already laid down. Solfeggio should be regarded primarily as a device for teaching tonality and tonal environment, and for this purpose it should be exploited to the limit. But the scale should not be used abstractly from the song, which constitutes the nucleus of life-giving musical experience to all procedures with young children.

E. It may be possible to introduce some of the drill in interval-recognition on which we have already commented. There will be a particular value in learning the minor and augmented second, because of the use of these intervals in the various scales. Farnsworth (*q.v.*) has an excellent discussion of how this may be done.

F. Lastly, we must manage to bring about a transition from relative to fixed pitch, for of course the score is a system of fixed pitch relationships. Sometimes this is attacked by a sort of indirect or "imperceptible" method, letting the children use the score from the first, and gradually grasp its meaning. Sometimes the problem is attacked directly and abruptly. But however it is done, it represents a most important bit of musical-mental development. Some of the devices used are as follows: the use of the letter-names as a step between solfeggio and the score; the introduction of instrumental music, which of course at once teaches fixed notation; the deliberate teaching of absolute pitch-memory for tone, which, as we have noted, is now in use in England.

Just when and how the score in its detail is introduced is accidental. What is essential is that we adequately provide for its apperception by the pupils.

2. Once the score has been learned, we should seek to use the new technical skill for a further and more exact development of the musical mind. For we are now in a position to have pupils analyze and handle compositions with a good deal more precision than would otherwise be possible. The following factors readily suggest themselves for more extensive and thorough training.

A. Phrase recognition is one of the important factors. When the score has been mastered, the phrase can be graphically represented with high precision, and may not be more thoroughly studied. In efficient phrase recognition there are two factors, accuracy and speed. Accurate phrase recognition depends on motor coördination, as we have seen, and particularly on breathing. So it is well to have children study the score from this standpoint, planning just where the breaks in the breathing ought to come, and so mapping out the phrasing. It is better to have children introduce their own slur marks than have these in the published copy. Speedy as well as accurate phrase recognition is the essential factor in speedy reading, because the phrase is the natural unit of musical meaning, in terms of which we read. While the ultimate basis of skilled reading is general musical expertness, we may speed up the eye movement by various devices such as flash cards, and so help to consolidate the reading skill already gained. Command of phrase is so important that the study of songs with special attention to phrase may well be the chief object of a whole year's work.

B. By the use of the score the teaching of the minor modes is rendered relatively easy, and thus the tonality sense is extended. In teaching the minor modes we may proceed

either to the tonic minor or the relative minor of the major scale. The former is more logical and direct, but the latter often easier for children to grasp, owing to American practice with solfeggio.

C. After the score is learned, it becomes possible to introduce parts, to teach chords and harmonic movement. As a drill exercise in connection with part singing, the triads and the dominant seventh may be built by the class, and the simpler resolutions practiced. A device sometimes used is to have part of the class sing chords while the others listen.

D. Lastly, it is feasible to call attention to key-relationships as exemplified by the modulations of the songs sung, and to do so via key signatures. || X

A few additional comments of a general nature remain to be made.

1. Procedural order is accidental throughout. What is essential is to use actual, vital musical experience as a means of training the musical mind, organizing the whole of the work round the valuable technical accomplishment of sight-singing.

2. It is very essential always to use actual songs, and to derive drill material from musical matter that the children have enjoyed, so leading them to understand it better rather than to begin with drill and work toward music.

3. While sight-singing is the core of the work, anything that can be done in the way of instrumental classes is all to the good. For some years violin classes have been found very successful, and recently class work in piano has been introduced. This makes the pedagogy both of tonality and of the score easier, because the pupil approaches it both from the relative pitch standpoint of the voice, and the fixed pitch standpoint of the instrument. We note that the *primary* reason for instrumental work is not to teach the instrument, but to teach music and musicality.

4. Throughout the whole course, song-making should be used as much as possible. This is the most direct and effective means for simultaneously reinforcing old knowledge and skill, through application, and for stimulating further learning by showing the need for it.

5. With regard to the question of formal work in voice control, which should not be attempted before the fourth grade in any case, the reader may refer to the discussion of vocal technique and that of the pedagogy of technique for young children.

THE FIRST SIX YEARS OF MUSICAL TRAINING: III. EDUCATIONAL AIMS AND VALUES ACHIEVED

We now ask how the first six years of school work in music, if spent in general as we have described, will help toward realizing the outcomes which we have recognized as essential in musical education. Or, putting it in another way, just how does such a course of training actually work toward the production of functioning musicianship? Our answer to this question, of course, is the ultimate justification for building the first six years of work about sight-singing from score, as we have recommended.

In general, the effect of such work is propædæutic. A solid basis should have been furnished for further development under the favorable circumstances of the secondary school.

The child should now be in a good position correctly to apprehend and respond to music which he hears, and to build up the higher and more specialized skills of the musician.

1. First of all, the course of training we have outlined favors the development of really adequate skill in listening, one of the major outcomes of musical education.

Here we may pause to consider a criticism sometimes directed against the teaching of singing from score in the

grades. It is sometimes said that since the great majority of children will be "consumers" rather than "producers" of music in later life, it is best to confine their early school training to appreciation alone. And courses have been worked out for the grades which deal in nothing but the "appreciation" of music. But the reply is that genuine appreciation, as we have seen, is impossible without the power to hear, respond to, and justly apprehend the musical pattern and meaning. The appreciative attitude which we wish to cultivate is essentially an intelligent attitude, based on grasp of the musical structure. And in producing this mental grasp, the power to read the score is a tremendous asset. Without at least this technical proficiency, work in appreciation is always apt to be very superficial.

From the standpoint of listening and appreciation, we may claim that the grade course we have briefly described yields the following distinct advantages.

A. It constitutes a very solid preliminary training for later courses specialized to music appreciation. The pupil can use the score to help him grasp the music. And in learning the score, he has at the same time learned much with regard to musical structure. In this way the psychic factors which we found to be most worth cultivating in skilled listening (Chapter VII) are directly fostered.

B. By beginning with the rote song, and by dealing always in terms of actual musical experiences which the class is capable of sharing, a favorable general attitude toward music is established in the pupils. As examples of a music pedagogy that failed dismally just at this point we may instance first of all the crude, ill-organized chorus singing of some years ago and, second, the converse mistaken practice of drill on technique.

C. From the very start the rote song is to be taught in terms

of feeling, in terms of motor coördination, and in terms of musical structure. In this way we build up from the first a good balance of the intellectual, the motor, and the affective elements which we have seen characterize the expert listener.

2. In the second place, the course of training recommended favors further development toward musical performance.

A. The power to read has been established, and it has been organized on proper and solid psychological foundations. This is something that many pupils never gain at all from private teachers who entertain the quaint theory that reading is a native gift rather than an acquired habit.

B. The whole musical development of the pupil has been built on what we have come to recognize as the two essential foundation stones — the power to hear tones in relationship, and the power to coördinate muscularly to the structure of the rhythm. This, as we have insisted, is the source and fount of executant technique.

C. While no great agility or precision has been built up, and while it would be a mistake to attempt this, because of the age of the pupils — and this applies to the studio as well as to the classroom — no bad motor habits have been formed, and yet the children have made an appreciable beginning in music.

In these respects, then, the course definitely prepares for performance, and not for vocal performance only, because it emphasizes precisely those elements which are common to the technique of the voice and all artificial instruments likewise. So it lays a foundation for studio work or secondary school work in “applied music.”

3. As far as training for composition is concerned, it will be noted how excellently the course fits into the general scheme of education suggested in Chapter IX. In building toward that point of insight and musical intelligence where the student can produce worthy music with his own pen, we need just

the kind of musicality whose rudiments are here cultivated. The fine ability to hear and image tone-relationships and harmonies, to grasp rhythm, to respond to form — these are the cultivated talents of the composer. And it is at precisely these musical-mental skills that we aim in a psychologically correct scheme of teaching children to read.

SECONDARY SCHOOL MUSIC

In general, secondary school music is more diversified and specialized in character than the music work in the elementary school, and is, on the whole, an elective subject. The main points to bear in mind are the following.

1. If at all possible, music should still be a requirement in the seventh and eighth grades, for the reason that there are still vital musical experiences which the pupil lacks. He needs to be definitely introduced to instrumental music, for with this there comes an immense broadening of the artistic horizon. True appreciation work can now be organized, leading from the simple melody with which he is already familiar to the art song, supplementing this with the dance, and progressing to the polyphonic and sonata types, and to modern music. At the same time, music begins to take on the guise of a content study, and the class may take up the various orchestral instruments, their use and construction, the lives of great musicians, and musical history.

2. Chorus work may be organized either as an elective or required activity, though probably the former is to be preferred. Still, it should be remembered that chorus experience is very valuable as a factor in musical training.

3. We may consider the high school glee club and orchestra together, as the same comments apply to each. The first requirement, if these agencies are to be capitalized educationally, is to work for as perfect a standard of performance as

possible. This is really a much more central matter, and a more strategic point of attack than to try to eliminate "poor" music, and insist on the playing and singing of "good" music. The way to raise the standard of musical taste is to begin at the beginning and work up, not to snub the pupil's natural wishes and tendencies. The more perfectly poor music is played, the more it will tend to rouse an interest in better music, for once attention is really and effectively focused on beauty, one wants more and more of it. So the thing to do is to follow the pupils' own preferences, to a large extent, but to insist on the most meticulous perfection of workmanship.

4. The crux of the theoretical music course in high school is the pedagogical viewpoint from which it is handled. If it is taught along the traditional lines of the old-fashioned conservatory work in formal harmony, it will be of very little value indeed. If it is regarded as a formalizing and regularizing of actual directed musical experiences, through which the pupil has been passing since he entered the first grade, it may be a tremendous boon. It should fit essentially into the plan for developing compositional skill which has already been discussed.

5. High school credit is frequently given for private studio lessons in instrumental and vocal music. The principles to be borne in mind here are as follows.

A. Such credit must be for a limited number of hours only. This is almost self-evident.

B. It is almost essential that the school draw up an approved or accredited list of music teachers, whose work it will recognize in this way. To do this is its right, and it almost seems to approach the status of a duty, in spite of possible embarrassment.

C. Credit should not be granted for vocal or instrumental music unless a certain amount of work in "theoretical music"

is associated with it. The reason is, not that music is to be made predominantly a content or knowledge study, but that the school must assume a proper orientation and coöperation both in the "practical" and "theoretical" instruction, aiming at the production of musicianship. So the "practical" music teacher should hardly be satisfied unless the pupil is studying "theory" *pari passu* with his vocal or instrumental development. The assumption would be that such a pupil was not serious in desiring genuine musical development rather than a superficial accomplishment.¹

¹ NOTE: It should be definitely understood that we have not intended to argue for any specific or exclusive ordering or laying out of the course in grade school or secondary school music. What is important is that the psychological elements — the vital musical experiences — indicated, shall be mediated to the pupil somewhere along the line. Just when and where a particular experience shall be taken up is a matter of convenience and facility. For instance, if the system is fortunate enough to possess very good equipment for mechanical music, some experience with orchestral instruments and their effects may be possible in the grades instead of waiting till junior high school is reached. In view of the high elimination about the sixth grade there is a solid argument for making the experiential content of the first six years as rich as possible. On the other hand, overwhelming the child with new material must be avoided.

CHAPTER XI

THE STUDIO MUSIC LESSON

Few questions in connection with musical education are more worth discussing than the true nature and aim of the music lesson. We have here a point that is of interest to every parent whose children are studying music, to every pupil, and to every teacher. The parent needs some really intelligent criterion for decision as to whether the teacher he has chosen is carrying on the pupil's development properly. And the more adequate his comprehension of what the music lesson ought to be, the better he will be able to coöperate with and appreciate the teacher of high excellence. The pupil, too, in so far as his age and maturity permit, should have some conscious insight into what the teacher is trying to do. He should be able, in a measure, to see the rightness of good procedure, even when it imposes hard and disagreeable work upon him. And the teacher, also, should give more deliberate, thoughtful consideration to the aims of the lesson than he often does. Many teachers hardly reflect at all on what the lesson in music ought to be and do. Their tendency is just to teach as they themselves were taught, and in this way they not only waste time for their pupils and fail to bring about their proper progress, but they themselves fail to grow in the pedagogical art.

In spite of the great importance and value of school work in music, which supplements that of the studio at so many points and provides such a broad basis for further training,

most school music teachers would freely recognize that studio teaching is, and will continue to be, the great instrumentality for really advanced and intensive musical training. Class work in music has its limitations from the very nature of the subject; musical progress cannot be uniform for a group of pupils; each pupil has very special problems and aptitudes; and each pupil's work is to be judged, not by objective standards, but by the expert subjective opinion of the teacher. So a discussion of the studio lesson is of the greatest importance.

THE BASIC AIM OF THE GOOD MUSIC LESSON

The music lesson, like all teaching, can exist for no other purpose than to stimulate and make more efficient the process of learning. Without a teacher, much learning would never even begin; most of what did start, would start wrong; and what learning was well started would go astray and never reach anything like the ultimate limits of attainment.

So every procedure in the music lesson is to be judged by one criterion only. Does it or does it not definitely help the pupil to learn music better? There is a real sense in which it is not possible to teach anyone anything. All that we can do is so to arrange conditions that he will learn with maximal ease and effect. Here we see the importance, not only for the pupil, but for the teacher, of the analysis of practicing, which we undertake in the next chapter.

Bearing in mind this basic aim, we find that it determines for us the constituent factors of the good music lesson, and also shows us the defects in certain types of music teaching.

FACTORS IN THE GOOD MUSIC LESSON: I. MOTIVATION

Here we have a music teacher confronted with the problem of a new pupil. What must be his very first concern? He

must do his best to cause the pupil to wish to study music. Psychologically speaking, learning depends upon the will to learn. If this is absent, then learning does not take place. We learn because we desire to do so. Hence the very first task for the teacher is to set up in his pupil's mind the greatest possible interest and enthusiasm for the study of music in general, and for the particular projects laid out for him.

This is done, and can only be done, by making use of the motives — some innate and instinctive, some acquired — with which the pupil is endowed. The music teacher should recognize that there are in the child various impulses implanted by nature, to which he may appeal if he has the skill. And also he should understand that the child is not only the product of nature, but also of his home, his playmates, and his school; so that there are many secondary, derived, social impulses and prejudices which will either drive him away from or toward the effective study of music. Without trying to be exhaustive, let us briefly discuss the character and proper treatment of the chief motives to which the music teacher should appeal.

1. One of the very commonest motives which lead people to study music is the desire for social distinction, in one of its many forms. This motive, it is true, may be more active in the parents than the child, for they may wish their youngster to take music lessons because it is the seemly thing to do, and because they want him (or more usually her) to develop music as a parlor trick. Still to some extent this motive may be inculcated in the child himself, by direct preachments or indirect suggestion, at home, and it is certainly one with which the teacher must reckon. How important a part the desire for social distinction plays in leading to the study of music is well demonstrated by its use in the advertisements of quack courses in various instruments, which promise the vic-

tim that after a very few lessons he will be able to astound his friends — a prophecy which seems to have some of the aspects of a veiled threat.

What should the teacher do when confronted with this motive? First and foremost, he should not take a negative attitude toward it, for any incentive is better than none, and in some respects this is a good and healthy one, though not the best. Many teachers bitterly resent having to give pupils pieces of the sugarplum variety, when their consciences call for large doses of Bach and the *Gradus ad Parnassum*. But this is a great mistake, for the more complex, subtle, and academic type of music may not only be beyond the powers either of the pupil or his parents to ask or even think, but also may completely transcend the pupil's feeble musical grasp. No mistake can be greater than choosing compositions which do not interest the pupil in the least, merely because in theory they should, and assigning appalling burdens of scales and exercises to be dinned in the ears of his unfortunate family, for no better reason than that the teacher himself was put through them and is so satisfied with his own musicianship that he thinks no footsteps can possibly be so worth while traveling as his own.

The desire for social distinction, though it lead to a preference that is almost a demand for obvious and rather futile compositions and only a very little "technical drill," is a good, honest, human motive, and its incursion into his sacred domain will help to keep the teacher close to reality. His business is clear. It is to accept the pupil's choice, at least in appearance, making what immediate suggestions he can to improve it, but being thankful for any usable motive at all. And then he should teach the trivial drawing-room piece so faithfully, showing so clearly all of whatever poor beauty and musicianly insight it may contain, that its study tends to raise standards

first for the pupil, then for his family. Let not the teacher despise the musical philistine.

2. Another important motive which the music teacher finds ready to his hand and is foolish to ignore is the desire for self-display. Music is able to satisfy this with peculiar adequacy. The pupil very readily pictures himself entrancing vast audiences with incredible displays of instrumental gymnastics. And although the sobering realities of the concert platform are apt to be a very cold douche indeed to such vaulting ambitions, nevertheless, the motive is a good one.

The great opportunity for the teacher here is to show the pupil that if he fails to prepare adequately and to study faithfully, his appearance before an audience will be a display of weakness rather than strength. The prospect of a public appearance is a first-rate chance for the teacher to raise standards. He can warn the pupil that there will be some critics in the audience, and that although most may fail to recognize mistakes and poor playing generally, some will. And he can insist, usually with much effect, that a public performance that does not represent the player's honest best is fundamentally discreditable. Schumann gave a piece of profound advice on capitalizing the audience-motive when he said: "Always play as though a master were listening."

So the teacher who is wise will secure opportunities for public performance, even for his elementary students, not only because such experiences tend to improve technique and control directly, but also because the prospect of them is a stimulus to faithful work.

3. Yet another motive for music study lies in the fact that music is one of the supreme avenues of human self-expression. The possession of trained musical insight and power is an unquestionable asset that definitely contributes to the fullness and worth of life. And the teacher may make use of this

motive in many cases, presenting music as an accomplishment in the best sense of the word, and guiding achievement with this end in view.

This, in fact, is the true meaning of the much abused word culture. In addition to his civic and vocational activities, we have to recognize in man a most important group of avocational activities. And these constitute the essence of what we too vaguely call culture. In this group of avocational activities music belongs, for a great many people. They find in it a pleasure, an expression of various moods, a noble game, a consolation, one of the adornments and values of life. For those who have this attitude and need in regard to music, the business of the teacher is to indicate first the meaning of, and then the way toward, higher levels of musical culture and achievement, and to show that the more perfectly trained is their musical ability and insight, the richer the enjoyment which will be yielded by the art.

4. The last, and by far the most important and valuable of the motives which we shall discuss is love for the beauty of music. The musically talented child, whose home conditions have been favorable, will probably come to his first teacher with at least some genuine feeling for musical beauty. And in any case, the music teacher should use every possible means to inculcate this motive, for of all those we have discussed, it is the most direct and impelling cause of progress. The means to be used are such as we have already discussed. The teacher should play rather freely to his pupils. He should encourage them to take advantage of every opportunity to hear the best music. He should seek, by direct advice and indirect suggestion, to influence their choices in connection with mechanical music. He should stimulate their interest in any available musical clubs or associations where ensemble work may be possible. He should seek to build up their passive repertory

of compositions known and enjoyed but not performed. He should talk music freely with them, and encourage their musical reading and exploring. He should suggest to them that they begin accumulating a musical library of the great classics, and that they delve into it from time to time. And in all the detail of his teaching, everything should be begun, continued, and ended in that spirit of beauty which is the life and only meaning of the art.

This, to be sure, is not an exhaustive list of all the motives which lead pupils to study music with interest and zest, and which may be utilized by the teacher. But it does consider those most commonly found. And whether these or others are employed, the teacher should always have in mind the supreme importance of some sort of effective motivation. The kind of music study that is thoroughly bad from every standpoint is that which entirely lacks motive, interest, and life. The pupil is assigned a tedious piece, of impeccable musical value — possibly some such dull masterpiece as one of the two-part inventions — and still more tedious exercises and scales. He hammers over these for a wearisome hour each day, under pressure from his parents. They mean nothing to him, and he is conscious neither of direction nor progress nor desire in his work. The criticisms he receives at his weekly lesson have no rational meaning, and are no more than the hostile and unintelligible reactions of a tyrant. And as soon as he is old enough, he repudiates with relief work that has been literally nothing more than a waste of time and that has made no educational impression whatsoever.

FACTORS IN THE GOOD MUSIC LESSON: II. ORIENTATION

A proper management of the impulses that lead to zealous learning is essential throughout the whole development of the pupil. It forms, as it were, the background of all good teach-

ing, for as we have seen, the aroused and effective will to learn is the condition of all improvement. Now, coming to the more special detail of the music lesson, we find that the proper mental orientation on which effective practice depends must be largely supplied by the teacher.

Effective practice is work at the manipulative skills required by the instrument or voice, always with desired and desirable musical results clearly before us. And its inception consists in leading the pupil to recognize the musical meaning of the composition. This is done by having him hear it and enabling him to image its sound and effects clearly and correctly. In order properly to orient the pupil when a new piece is first assigned, the teacher is recommended to consider the following devices.

1. Let the new composition be played through to the pupil. First let it be played so that he may gain a general idea of it and a general reaction toward it. Then let it be repeated several times while he follows it on the score. Then let the various points of special interest be brought specifically to his attention — the thematic material, and the broad outlines of its treatment, the outstanding harmonic progressions, the rhythmic peculiarities and beauties, and so on. And finally let him listen to it once again without being called upon to take an attitude of keen analysis. Half an hour so employed with a composition that the pupil is about to attempt will yield rich returns in interest aroused and in the speed and intelligence of the learning that will follow.

It may be that for one reason or another the teacher will wish to assign music which he is not able to render to satisfaction. It is here that the various instrumentalities for mechanical music — the reproducing piano and the phonograph — have high value. They should be part of the equipment of every studio. Where possible, it is excellent to have the pupil

go over his piece for as long as he wishes, either on the phonograph or the pianola. We may note that some very distinguished pianists, in taking up a new work, always study it intensively on the pianola before as much as reading it over.

2. Let the pupil be encouraged to take any chance that may come his way of hearing formal renderings of the composition he is studying, at concerts, on the radio, or otherwise. Here is one of the values of class-playing, for it stimulates interest in new works, and broadens the musical horizon. The teacher need never fear that large opportunities for hearing good music, even through mechanical means, will kill the pupil's interest in playing it. The more one hears and enjoys, the more one wishes to play. There is a thrill and interest in the actual production of music which mere listening can never duplicate. And the pupil will wish to become the actual producer of those effects which have given him pleasure.

3. Let the pupil be encouraged, and indeed required, to study the score intensively before playing. Some teachers have even gone so far as to urge that the composition be memorized from score before it is played at all, and if a teacher can work systematically toward this with a pupil, for a number of years, it is probably an excellent device. In any case, intensive preliminary study of the score is a most valuable means of training the musical imagination. The pupil should be told to make every effort inwardly to hear the music. He may perhaps study a passage in this way, and then play it through once to check up on his imagery, and then turn again to his imaginal study. The great importance of connection between eyes and hands by way of the ear should be made emphatic for all teachers, for it is often really astonishing how readily a technical difficulty will clear up once we exactly know how the passage ought to sound.

4. All these studies may be pushed as far as we like in the

direction of musical analysis. Our decision how far to go in this direction depends entirely on the pupil's purposes and his prospects in the way of advanced study. In schools of music, where presumably the students are serious and have a professional interest, orientation to new work should bring in a good deal of technical analysis, and the use of the symbolism of harmony, counterpoint, and form. In the case of the private teacher, this is not usually so possible or even so wise. In any case, we have here the vital, growing point for the teaching of "theoretical music," for here it connects with actual musical needs and serves as an interpretation of actual musical situations, and so is more than mere formal grammar.

All in all, whether these or other devices are used, the initial business of the teacher, when a new composition has been assigned, is to saturate the pupil in its meaning and beauty, and to have him grasp it, in broad outline and fine detail, always in terms of the musical medium. After a lesson so spent, he should be told to try it out for himself for a week — playing it over and experimenting with it as fancy may suggest, seeking to capture the effects he has heard and imaged, investigating methods of motor control, and in general going through that period of trial and error, or multiple response, which is a necessary early step in learning.

FACTORS IN THE GOOD MUSIC LESSON: III. MOTOR

DIAGNOSIS

After a fair start has been made on the basis of proper orientation and musical insight into the desired effects, the next stage is that in which the teacher begins a careful analysis of the motor habits needed by the pupil to translate the musical conception into sound. This process is likely to go on for a considerable time. Always it consists essentially in diagnosing the pupil's difficulties, suggesting the means of meeting

them, and coming back again and again to the musical meanings which control the whole process of learning. The pupil is now beginning to rehearse and establish the various levels of skill necessary for proper performance. First he enters the stage where he can stagger through the various separate passages, but must pause to redirect himself after almost every one of them. Little by little he gains facility in passing from one to the other, until only a few serious difficulties remain. And at last the work is completed by his acquiring a motor setting so skilled that he can adjust himself to the entire composition, sensing the last detailed technical problem before the first has been attacked. At each stage of proceedings the teacher can shorten learning and bring it to higher perfection by his suggestions. Here is one great advantage which the virtuoso teacher possesses over one who is not a very expert performer. The latter will probably not have the same wide range of technical experience to guide him in helping the pupil to overcome the special motor difficulties and problems he encounters.¹

While passing through this stage of development, it is very necessary that the teacher give highly specific and well-understood instructions for practice. A fault in many music lessons is that the pupil is overwhelmed by a great many suggestions and bits of advice, which may be very good in themselves, but are so numerous and so novel that they confuse him, and are forgotten when he comes to practice them. The way out is usually not hard to find. It may be well to limit the ground covered. Or a carefully worked out system of marking the pupil's score may be employed, so that the teacher's suggestions are embodied in working notes. Very often the kind of marks the teacher places on the score turn out to be unintelli-

¹ For this concept of levels of movement-skill in performance *vide infra* Chapter XII.

gible when they are looked through the next day. Ordinarily a definite code should be utilized. Or it may be a good plan to have the pupil himself enter the markings calling for changes in pedaling, bowing, registration, dynamics, tempo, and what not. We see here the great value of allowing some trial and error and multiple response to take place in every course of learning, for if the pupil has made a good many experiments of his own, the teacher's comments will be far more intelligible and, moreover, the music lesson will benefit from using the law of effect, for the pupil will come to enjoy the successful reaction by contrast with those that have failed.

Always, in teaching motor skill, we must keep the musical goal steadily before us. The pupil must know how the passage ought to sound before he undertakes experiments to make it sound so. And as he works, an ever clearer and more precise musical conception should rise before him, so that he develops, not technical skill alone, but also musical insight and grasp.

FACTORS IN THE GOOD MUSIC LESSON: IV. ADVANCING STANDARDS

It is toward the latter part of the stage which we have just described that we encounter one of the danger points in musical training. For the pupil may become satisfied too soon. Every teacher should understand that satisfaction absolutely determines the upper limit of advancement in skill.

As the composition begins to sound fairly well, the tendency is to stop working at it and to wish to turn to something else. The social incentives begin to lose their force, for the pupil feels that he now plays quite well enough to make an impression. And unless some other motive is operative, the end of the course of learning is in sight. This, of course, is most unfortunate, for it is precisely those higher and finer shadings of control which represent the marginal returns of effort, and

for which so much time and labor must be spent, that mark the really worthy and musicianly performance from one that is only mediocre. Expert skill is never to be gained by half or three-quarters learning of a long string of pieces, for no chance is given for the highest-level technical habits to become fixed, or even for the lower-level habits to reach the maximal dynamic control.

This situation can be met in one way only. If the lengthy stage of motor diagnosis and development has not also been a stage in which the pupil's conception of the musical meaning of the composition has become clearer, and so his standards for proper playing higher and more exacting, he is almost certain to stop before the end is reached. The point always is that one does as much as one wants, and if one does not intimately and keenly recognize the need and possibility of higher advance and finer perfection, one ceases to progress. The development of skill is always limited ultimately by our mental grasp and insight. So the teacher should press on from his correct initial orientation of the pupil's work, to reveal an ever-expanding vision of the beauties of the composition. Here again we see the truth of our claim that when one studies a composition in order to play it, musical insight as well as motor skill must develop.

FAULTY TYPES OF MUSIC LESSONS

It is very instructive to make a study of the commonest kinds of defects that occur in music teaching. Always we shall find that the weakness is due to the fact that the lesson fails properly to recognize and guide the pupil's own musical and motor learning.

1. A great many music teachers work on the naïve and psychologically quite incorrect assumption that musical learning takes place through imitation. This, indeed, is one

of the commonest faults in musical instruction. Such teachers tell the pupil to play or sing the piece "just as I do." Or, if some passage gives trouble, the pupil is told, in effect, to copy the teacher. Or the pupil is encouraged to attend concerts or to listen to mechanical reproductions, and then to try to copy the artist's "interpretation." This procedure is wrong in every particular. The chief reasons against it are as follows.

A. The true musical goal is not the general broad effect of a passage, but its specific musical meaning. A great artist reaches his "interpretation," by the most rigorous and detailed analysis. And it is only by this means that any legitimate reading can ever be achieved. Very great harm may be done by trying to produce effects that have been broadly grasped without an insight into the niceties upon which they depend. The pupil will tend to imitate the faults rather than the excellencies of what he hears.

B. The pupil needs to know how to produce an effect, as well as to know what it is. The perfect reading of a difficult passage depends first on the closest analysis of its musical meaning, and then on painstaking experimentation to find the appropriate motor means. Some of the finest effects of great artists are produced by motor means so subtle that only the expert can catch them. The pupil who merely tries to copy them will land in disaster, banging and yelling instead of producing good tone, exaggerating rhythm and *rubato*, and developing bad technical and musical habits.

C. It is true that motor difficulties often yield with astonishing ease when a passage is properly heard or imaged. But this is not the case when no more than its broad effect is grasped. We need an extremely expert and painstaking study as a functional goal for motor practice.

D. A merely imitative attitude compromises the pupil's

whole musical development. The pupil cannot play as well as his teacher, still less as well as a great artist. But he will never learn to do so by imitation. The process of learning to play is a development of one's own musical mentality, which sets up the objectives, and then the motor skill to realize these objectives. This is what we must teach, if we are to teach music at all. The pupil's development must necessarily be his own, or otherwise it will never really take place at all. We may coach him to play one piece as a pale copy of some great artist's rendering. But we can never build up his own musicianship by any such means.

This, of course, does not imply that imitation is an agency that should never be used, but only that the chief emphasis should never be on mere copying of generally apprehended effects. Often the instrumental teacher will show the pupil how a motion may be made with advantage. And in vocal work, the pupil should always be trained to try to imitate good tone with high precision. But here imitation is used as an aid to analysis and comprehension, and is directed upon carefully isolated detail rather than on broad effect and procedure.

2. Another faulty type of lesson is the lesson that is purely inspirational. This was the kind of teaching done, for instance, by Liszt, who astonished, and indeed discouraged, his pupils by his own masterly readings which they tried in vain to duplicate because they did not know how he obtained his effects. To be inspiring is only one side of the work of the music teacher. Musical learning is partly mechanical or motor, and the teacher who neglects technical detail is really neglecting something musically essential. It is not the point that we must work at motor means for their own sake, for, as we have insisted, developing skill and developing insight go together, and as we gain more perfect command of the means,

we also gain a clearer perception of the end for which they are to be employed.

3. The lesson which concentrates unduly upon technique and neglects musical values is so obviously faulty that little time need be spent upon it. We have insisted that work at technique can be effective only in so far as it is carried on with a conscious recognition of musical goals. And in all his teaching, both with elementary and advanced pupils, the teacher must bear this in mind.

CHAPTER XII

PRACTICE AND DRILL; THE PSYCHOLOGY OF MUSICAL LEARNING

Both for the school teacher and for the studio teacher of music a correct understanding of the psychological foundations of learning musical material and acquiring musical skill is of the highest importance. It is necessary for the school teacher to initiate various drill procedures in order to build up musical grasp and skill in her classes; and these urgently need to be directed along psychologically correct lines. And there is, perhaps, nothing that the studio teacher can do that will more greatly benefit the pupil than to train him to practice aright. Individual practice is a much more intensive and complex type of drill than is possible with grade classes, or even with ordinary ensemble groups in high school. But the same psychological principles hold in the practice-room that obtain in the classroom. And there is some reason to believe that psychologically correct direction is even more important in individual practice than in group drill, for unfortunately the student practices alone and unsupervised, and so must be very carefully taught the right mental attitudes and adequate habits of self-direction and self-criticism. We may remark that the introduction of supervised practice would be a worthy pedagogical advance in any conservatory.

AN ANALYSIS OF THE OUTCOMES OF MUSICAL DRILL

At the outset it is very important to be clear on just what the outcomes of practicing are. What we actually do when we

practice a composition, either vocal or instrumental, is to set up certain skills or habits, on which our performance of it absolutely depends. So much, to be sure, is obvious enough. But it is not sufficient to say that we always establish a group of habits. For the habits that determine the playing or singing of a composition are all related together, and indeed their relationships are as essential for us to understand as the habits themselves. The group of skills exemplified in playing or singing musical compositions constitute what is technically known as a hierarchy of habits. That is to say, some of them are absolutely basic and simple, while others, not less necessary, are still less fundamental and more complex. The more complex habits are, in fact, combinations of the more simple, and so the former presuppose the latter.

An illustration from another field may help to make clear this extremely important notion of habit hierarchies. In sending the Morse Code with a telegraph key, we find three general levels of skill. The beginner moves at the lowest level while he has to make the formation of each letter a separate problem. He then moves at what we might call the letter-habit stage. The fairly competent operator will not make each individual letter a separate problem, but will work in terms of words. That is, the rhythm of the whole word will be grasped and used as a single operation, and here we have the word-habit stage. But, of course, the ability to form a whole word on a single psychic pulse is impossible unless the letters are very well known and automatized, and in this way the higher and more complex habits depend on those that are more simple and basic. Then again, the very expert operator will form a group of words (perhaps a whole sentence, and perhaps not) just as the less expert man sends words. And again, it is obvious that word-group-habits depend on letter-habits, and word-habits. And it is interesting to note that very high

skill in sending the Morse Code does not depend on superior expertness in forming letters, for the letter-habits will long since have reached maximum efficiency, but on the building up of the higher and more complex habits.

This picture of what takes place when a motor skill is being acquired applies in outline to practicing, though unfortunately learning pieces of music has never been studied as intensively as learning to send the telegraphic language. The absence of direct experimental work on the problem is probably due to the very great difficulty in obtaining a record of results. Dots and dashes formed on the telegraph key are easily recorded, and so can be analyzed at leisure. But to make similar records of the exact notes played, the exact mistakes made, and the exact detail of the progress won on a keyed instrument such as the piano is a far more serious mechanical problem. For experimental work on practicing the piano equal to that done on practicing telegraphic sending or typewriting, one would need a recording device similar to that used in cutting pianola records, and its extensive use would be very costly. And the study of violin practice would be still more difficult. Still, direct observation, carried on with an understanding of the psychological problems involved, will give us considerable insight into the habit hierarchies that must be built up.

1. Performing music involves a number of *unit-movements*. These are separate and distinct motions of the various members, and constitute the basis of executant skill. Certain motions must be made with the fingers, the hand, the arm, the muscles of the larynx, the mouth, the tongue, etc., and these must be rendered habitual. If correctly carried out, they are almost all free movements, whether "controlled" or ballistic. There may be an instant of tension or "stiffness" at the beginning of a typical unit-movement, in order to throw the member with sufficient momentum; but we cannot tolerate

any rigidity during the movement, or at its close, for this would make it less precise, and also compromise our setting for the next successive motion. It is this repertoire of free movements that must be made automatic.

The total number of unit movements involved in technique is probably not enormously large. Experienced performers can usually make a fairly complete and accurate inventory of them. To render such movements as these automatic is the chief end of formal technical drill. There are, indeed, books of exercises which claim to give formal practice in all the unit movements required to play various instruments.¹ The trouble with these works is not that they do not cover all the ground, but that they are so repetitious that it would be a waste of time to work completely through them. Almost always they are organized in terms of differences in musical convention, whereas what we really want is to single out the different unit-movements themselves. For instance, in many such books we find an exercise in diatonic major and minor scales in double octaves, another in chromatic scales in double octaves, and another in major and minor triad and discord arpeggios in double octaves — all presented as such. But what we really need is means of building up and rendering habitual the two or three different kinds of hand and arm motion with which it is possible to play octaves.

What is really called for is a series of very thorough movement studies, to separate out and describe with accuracy the various types of reaction made in musical performance. And for this the ideal agency is the slow-motion moving picture. But here again the barrier is expense, for the slow-motion camera uses a great deal of film, and unless such studies were exhaustive and complete, they would scarcely be worth making.

¹ E.g. Raphael Joseffy. *School of Advanced Piano Playing*.

2. More complex and of a higher order than the unit-movements are the *combinations of unit-movements*. These may be either successive or simultaneous, and in both cases they must be made habitual.

A. The successive combination of unit-movements is well exemplified by cases where a trill leads instantly into a scale or a series of arpeggios. The pupil may learn to play the trill, and then learn to play the scale or arpeggios, but go to pieces when he tries to play the one and lead directly from it into the other. This is because a new element of skill, a new demand, has entered into the situation. He sets himself for the motion demanded by the trill, and when this is over his natural tendency is to stop. But he must immediately re-orient himself, and start on a new problem. It is in transition from one unit-movement to another that one of the greatest advantages of the free motion and of relaxation appears. For if we are relaxed at the end of one task, we are ready with a minimum of effort and doubt to enter upon the new one.

Every practical musician well knows the importance of rendering the transitions automatic. He finds that he can perform all the unit-movements themselves very readily, but that when they occur in the environment of the composition, they seem to escape him. There is, of course, nothing mysterious about this. It is simply an element in technique not ordinarily recognized with clarity.

B. Much the same considerations apply to simultaneous combinations of unit-movements. One may be able to play either a scale or a trill separately, but break down in both when they are put together. Combinations of different unit-movements in the two hands, or of two simultaneous unit-movements in the one hand constitute some of the most fundamental and familiar executant difficulties.

The self-same unit-movements are evidently employed in

almost all compositions, but the combinations in which they occur differ very widely. This explains why it is the skill gained from ordinary technical exercises, which concentrate upon unit-movements, often fails to transfer to actual playing, so that a scale or a trill which can be performed perfectly in isolation, gives trouble when it occurs in a musical work. A new and higher-level habit is now required, and this calls for special practice. In so far as technique is limited to unit-movement, it is general or formal. But there are exceedingly important elements in technique that are specialized. This is one reason why exercises should not be practiced much in isolation. Rather they should be used to meet difficulties experienced in actual playing, and we should always work not only at the unit-movement habits but also at their combination in the particular pattern needed for the piece of music we are studying.

3. Expert performance involves a still higher level of habit, and brings in what we may call skills of *general coördination*. So long as we have nothing but combinations in which one unit-movement leads to the next, until at last the end of the composition is reached, there is always an imminent risk of breaks in the chain, particularly under special strain and excitement, such as occurs in public performance. So we cannot feel that the limits of technical grasp have been reached until the player is able to feel the composition as a unit in terms of movement and to set himself, at the beginning, for the whole of his motor task, in all its complexity.

When the performer prepares and coördinates himself for the whole task — sensing and feeling, before he plays the first note, all the evolutions and involutions of movement that will be needed right through to the end and directing himself to their skillful and successful rendering — he produces in himself a motor attitude or set. This in itself is an act of skill, impos-

sible unless the lower-level habits are well established, and constitutes the final result of well-directed practice. That is, the power to do this is obtained in precisely the same way as the power to carry out a relatively simple unit-movement or to combine two of them in series. We must work on the composition as a whole, we must seek to reach perfect control in all its details, we must play it in many different ways, and at last we find ourselves so adapted to it that we can feel it as a unitary motor problem, lying out before us. This is not an easy kind of skill to set up. In the case of a complex piece of music, it may take years before we can acquire such perfect grasp. Indeed, some of the very best artists refuse to attempt a new work in public until they have studied it at least a year, although, of course, the unit-movements and combination-movements can be acquired in a few days. Here, however, we have the perfection of technical control, and the only means by which we can certainly avoid those blemishes which the amateur so typically finds occurring about the middle of a piece he thought he had learned well enough and is attempting in public.

So far we have spoken as if the hierarchy of habits involved in playing an instrument or in singing was in outline like that involved in telegraphic sending, though of course calling for a far greater variety of unit-movement habits. But in music complexities arise with which there is nothing analogous in telegraphing. It does not very much matter whether one always transmits an equal amount of energy to the telegraph key, or even how much energy one transmits. But if one is dealing with a musical instrument, this matters a very great deal. In using the telegraphic language, all that is important is the accuracy of the movements. But none of the technical habits in music has been brought to a satisfactory development until it has not only been made accurate, but also dynamically

precise. Dynamic control is necessary at all three levels of skill. It constitutes an especial difficulty in the habits of combining unit-movements. If one must not only change abruptly from one type of movement to another, but also completely change the dynamic balance of one's playing, it is clear that the transition is made more difficult.

Yet again, a musical instrument is very much more complex mechanically than a telegraph instrument. It is almost always capable of yielding pronounced differences of timbre if one knows how to manipulate it properly. And so the unit-movements and the combination-movements must not only be learned until they flow readily, and until dynamic flexibility and control has been set up; they must also be performed in such ways, and in such conjunctions, that they lead to the desired and desirable tonal effects.

Such, then, are the skills or habits which constitute the outcomes of practicing. We note first that the higher-level habits are impossible without those of lower level. Secondly, it is the higher-level habits of complex combined movement that tend to disintegrate most rapidly under strain such as that of public performance.

We are now ready to turn to a discussion of how these various skills may be acquired, in the classroom or the practice-room.

THE NEED FOR PROPER MENTAL ORIENTATION

In the proper conduct both of classroom drill in music and of individual practice, no point is more essential than that it must be carried on with a proper mental orientation on the part of the pupil. Musical goals must always be in mind, for two reasons.

1. It has been amply demonstrated that high-grade and efficient learning always depends upon the will to learn, a

phrase which every music teacher should take to heart. It is intense and accurately directed effort that brings about improvement. Mediocre, bored, unintelligent, and mechanical learning leads only to mediocre results. In building skill we go only as far as we intensely and actively desire to go. And so the pupil must have before him some impelling and appealing goal, if he is to progress. His work must be so organized that he is always consciously approaching some desired musical goal, and so that technical proficiency and the ability to sing or play the right notes are gained, not for their own sakes, but for the sake of an æsthetic result which is strongly desired and whose realization will lead to deep satisfaction.

2. Technique simply does not exist for its own sake, but only for the sake of producing musical results by instrumental or vocal agencies. And its excellence is measurable only in terms of such results. So it is that the insistence of intelligent public school music teachers that they do not aim to teach technique indicates what is quite the correct attitude in handling all musical drill, whether for classes or individuals. The proper starting-point is not with the motor means, but with the musical end. The first thing is to have the pupil grasp the composition — simple or complex — that is to be sung or played. Then on this basis we proceed to build whatever motor skills are needed to embody that conception in sound.

There is, indeed, something positively misleading in talking about *practicing* a piece of music. Rather, we should think and speak of studying a piece. In very elementary classwork such study will be carried on largely by rote. After the musical score has been learned it can become more analytic. But always the point must be to avoid blind drilling on mere right notes, and to secure repetition, correction, polish, and perfection so as to build up in the pupils' minds, and then to exteriorize in sound, a just and accurate conception of the musical

meaning of the composition with which they are dealing. In this way public school work lays the foundation of technical development, though, as we have said, school music teachers are entirely right in insisting that they do not aim to teach technique as such. Studio teachers, who do aim at technique, can well learn here from their colleagues in the schools. Always they may be sure that their pupils can never play better than their mental grasp permits. Often in their zeal for motor accomplishment they forget this, and so prejudice their pupil's whole development. It is always very certain that when we listen to a crude, clumsy reading of music, which yet seems to satisfy the pupil, the real fault is with the mental basis of his technique and with the mental orientation with which he is approaching music study. He must be led to substitute deeper comprehensions and more exacting standards in place of his superficial and facile insights. Until then not only his musical but also his technical advance will be arrested. Once granted mental grasp, however, the details of efficient practice and drill are not hard to formulate and follow out.

If a pupil is not trained to hear the difference between good and bad tone, it is hopeless to try to teach him the motor skills required to produce good tone. If he does not recognize chords clearly, and so is not able to follow the detail of the harmonic movement, we can never teach him the technique of the sustaining pedal. If his sense of rhythm is crude and defective, he will continually interrupt and distort the flow of the composition, his choices of tempo will be bad, and his use of the *rubato* a torture. If he has no intelligent *musical* insight into the plan of the work, he will never play with proper balance. And in general, unless he has musical-mental goals consciously before him, it is safe to say that he will never build up the refinements of motor habit and control necessary for a good

technique, because the need for working until the limit of perfection has been reached never occurs to him.

Practicing, then, should never be regarded, either by the teacher or the pupil, as routine work at motor skills which exist and may be cultivated for their own sake. Such practice as this stultifies itself and wastes time. Rather, our viewpoint should be that when the pupil practices, he is not studying the piano, the organ, the violin, or voice, but that he is studying music, and coming to comprehend and feel it more perfectly and at the same time making those adjustments of motor control rendered necessary by the exigencies of his instrumental means. It is in this way that progress is made. And once this attitude is realized, our problem narrows down to making all the detail of learning as efficient as we can.

THE APPLICATION OF THE LAWS OF LEARNING TO MUSICAL DRILL

Fundamentally, efficient practice depends upon the correct understanding and application of the laws of learning.

1. *The law of exercise.* — This is the principle that in order to build up any skill the correct habits must be used and encouraged, while the incorrect habits must be disused and discouraged. The most important practical applications of the law are as follows :

A. All three grades of habits which we have analyzed must be drilled and practiced. That is to say, we must use and encourage the correct habits of unit-movement, of combinations of unit-movement, and of wider coördinations. A mistake sometimes made is to think that the most important type of practicing is that which concentrates on unit-movements, and this is even referred to as working at “technique” *par excellence*, as opposed to practicing on a composition. As a matter of fact, it is this kind of “technical” practice that the school teacher often has in mind in claiming that she is not

trying to drill on technique at all. Her objection to such drill for young children is perfectly right, for it embodies a minimum of musical meaning and interest. But it is quite wrong to suppose that technique is confined to unit-movement, and that work at it necessarily implies formal "exercises." On the contrary, technique involves combinations of unit-movements, and wider coördinations as well. The idea that there is somehow a basic difference between practicing at motor technique and practicing a musical work is not tenable. The real distinction is always between the different levels of habit to be formed.

When a class sings a song, or a pupil plays through a piece, all three levels of habit are being actively used. In grading work for a young pupil, it is always well to make all unit-movements as simple as one possibly can, so that these hardly need any special, independent drill at all. Let him build up simple coördinations and combinations, all of which carry a real musical meaning, and then let him work back, and do what foundational drilling at unit-movement proves to be absolutely necessary in order to embody in sound the meaning of the music, and to make the combinations and coördinations flow readily. A minimum of unit-movement drill should be employed for grade school classes and elementary studio pupils, and what little is given should always consciously aid in achieving desired musical results, and in it the pupil's intelligent coöperation should be enlisted. With advanced students and ensemble groups, of course, the problem is quite different, for they can readily see that certain obstacles must be overcome, and so can be led to drill at unit-movement with intelligence and enthusiasm. But for elementary pupils of all kinds, compositions carrying a genuine musical meaning, but involving absolutely minimal problems of unit-movement, are clearly what are desirable.

B. In teaching technique, teacher and pupil must coöperate on movement analysis. On the purely motor side the great desideratum is always freedom. With beginners in school and the studio the aim should be rather to avoid wrong, stiff movements than to inculcate the right unit-motions in detail. As the pupil advances, however, more detailed positive diagnosis is needed. Here is a task calling for great analytic keenness. It is always far easier to talk about relaxation, and then sing with a perfectly stiff throat, or play with iron wrists and tense muscles, than to work and experiment until that freedom is actually obtained in every last detail of motion. The danger, of course, is that the pupil will be allowed to use wrongful instead of correct habits, and compromise his whole motor development in consequence. Making sure that right habits are used and wrong ones avoided calls for constant vigilance.

C. Motor errors are always far more serious than note errors. Striking a few wrong notes is not, indeed, a serious matter at all. A teacher who required a pupil to try to play a study or a composition through without a slip, and who made this a standard, would be working along totally unpsychological lines. To require a pupil to go back each time a slip occurs is, in fact, to rehearse him in some of the most vicious of all technical failings. In dealing with a pupil who makes many mistakes, what is necessary is to seek out the underlying causes of weakness and remedy them. It will often be found that they consist of bad motor habits — usually habits of making stiff, slow movements, perhaps through excessive and harrowing caution, which defeats its own ends. If we can establish a correct set of motor responses, the wrong-note difficulty will clear up of its own accord.

D. It is always much easier to start a pupil right than to correct his faults. Every teacher knows this well, but not every one clearly understands the reason. A pupil whose

motor technique is basically defective has set up and practiced wrongful habits, and perhaps even gone so far as to persuade himself into enjoying them. In moments of inattention or strain, he slips back into his vicious tricks with a fateful ease. And his only salvation is great patience and a willingness to work hard and long to re-orient himself. Here we see the great importance of elementary teaching in music. One aim of the public school teacher should be to impart muscular freedom at least in the vocal apparatus, so that the pupil will know what it is.

2. *The law of effect.* — This is the principle that those movements that are satisfying tend to become habitual while those that are annoying tend to be eliminated. This law applies equally to group drill and individual practice. In teaching the movements necessary for proper tone-production, proper dynamic shading, proper rhythmical delivery, etc., what we need to do is first of all to give the pupil actual experience of the correct movement (always making sure that the correct, free control is being used), to have him associate the feel of the correct movement with musical results which he recognizes as desirable, and so finally secure that he shall come to *like* the correct movement, and feel incorrect, stiff, awkward movements as unsatisfactory. There is, indeed, no substitute for actual trial. It is hopeless to lecture the pupil on correct movement and incorrect movement until he has actually experienced both. Proper pedagogy indicates that we must make it our business to have the correct adjustment recognized as such — that is, recognized as desirable — by its association with the precise musical effect that is wanted. Lack of discrimination in practice, with resulting crudeness of technique, consists very often in being pleased with second-rate movement habits and accepting, and so making habitually tolerable, second-rate musical results.

To sum up, good drill and practice must be very carefully and precisely directed and it must be pleasurable. For these are the conditions on which efficient learning depends. Putting the matter somewhat differently, good practicing depends for its results, not on the number of repetitions, but on their quality. The mere mechanical repetition of a movement, over and over again, is not only joyless and annoying, but it tends toward fixation upon the wrong *kind* of movement. At each repetition we should make sure that we are exercising the very habits we desire, that we are approaching some valid standard, and that we are working with interest and enjoyment.

MULTIPLE RESPONSE AND ASSOCIATIVE SHIFTING

Pushing our analysis of learning one step further, we come upon the two very important phenomena known as multiple response and associative shifting.

I. When we undertake an unfamiliar task involving motor skill, we always find that we make a larger or smaller number of unsuccessful motions. Instances that readily occur to the mind are learning to ride a bicycle, to serve at tennis, or to make a golf stroke. In such cases we find a typical period of experimentation, of trials which lead only to failure, of motions which only succeed once in a while. And the point is that in building any skill, including musical technique, this stage is necessary and valuable. From one point of view it seems like a waste of time. We wish that we might eliminate the weary and futile fumbling and failing out of which success emerges, sometimes slowly, but sometimes with startling suddenness. But as a matter of fact, these preliminaries serve a most useful purpose, and are of real service unless continued too long. They are useful in that they give the pupil experience with the wrong ways of doing things, which helps him to

comprehend the right ways more accurately, by contrast. For instance, a pupil may try out half a dozen different types of movement to overcome a difficulty. To be sure, he will not usually do this on a basis of deliberate planning, but will merely fumble through his various attempts. When finally he hits on the right movement and his trouble is overcome — whether the discovery is made by his own effort or imparted to him by his teacher — he will not only have learned to distinguish and be satisfied with the feel of that movement, but also to distinguish and be annoyed with the feel of the wrong and futile motions. In other words, this procedure brings the law of effect definitely and helpfully into play.

So in studio teaching when a composition has been assigned, it is in general good to have the pupil work over it for a time by himself, making experiments, seeking the way out of difficulties, trying one means and another to produce the desired effects. In the first lesson on a new piece, the teacher should devote himself to its musical value — playing it to the pupil, analyzing it, explaining its spirit and meaning, telling of its tradition, demonstrating its detailed beauty. And then, for perhaps a week, the pupil should be allowed to fumble for the effects that he has enjoyed. This period of experimentation seems to be a factor in the efficient learning of skills for which there is no substitute. For it is possible to be too planful at the beginning and to eliminate so many false movements that the real significance and distinction of the correct motions is never appreciated by contrast.

2. In associative shifting we have the other side of multiple response. For as learning proceeds, we little by little come to tie up the successful movements with the desired results. Unsuccessful, clumsy, false motions become eliminated, until at last the clear motor skill remains.

For the teacher, there are three points of importance in

the psychology of associative shifting. (a) It is always very necessary to keep an exacting goal consciously before the learner. Once our standards are lowered, the whole process of learning degenerates, for we become satisfied with a type of skill that will produce the results that we want, although these are not what we should want if we desire the best. So the pupil must never be allowed to rest content with a mediocre reading of a passage, but must always be led to perceive perfections in advance of his present achievement. (b) Where there are several alternative motor means of achieving a desired musical result, it is the business of the teacher to decide which is best under the circumstances. (c) Oftentimes a pupil will lose himself in the mazes of his multiple responses, and despair of ever achieving a musical effect that really satisfies. In this case it is the function of the expert teacher to indicate means that the pupil has not yet tried, and to lead the way to success. And often, too, it would be unwise, and unduly time-consuming, to allow the experimentation of multiple response to go on indefinitely. And here the teacher steps in to point the pupil to short-cuts.

THE DISTRIBUTION OF PRACTICE PERIODS

Practice periods should not be very short, for then we hardly have time to concentrate and gain momentum. And they should not be very long, for then we lose concentration. Roughly speaking, their length should be determined by the incidence of fatigue — that is to say, when we find that we can no longer keep our attention keenly and actively fixed on what we are doing, we should rest or pass on to something else. This is a fair summary of the results of psychological studies of the learning process.

The actual length of time we spend on practicing depends very largely on the complexity of the habits on which we are

working. If we are drilling ourselves on unit-movements, we should not continue for very long on each one. It would, for instance, be hard to concentrate our whole mind upon the motion required for a trill for longer than a few minutes, and beyond that time, the best thing to do would be to stop, and return later. But if we are working on the general coördination of the great mass of unit habits and combination-movement habits involved in playing an entire composition, we may be able to work for a couple of hours.

On the basis of experimental findings, the best advice that can be given about the distribution of time on practicing music seems to be this: we should not hold ourselves to a rigid schedule. That is, it is not the most efficient and intelligent arrangement to devote twenty minutes uninterruptedly to exercises, twenty minutes to scales, twenty minutes to studies, and an hour to the composition. A much better plan would be to begin with the composition. Perhaps we can perform all the necessary unit-movements and combination-movements easily and correctly, and in that case we can devote ourselves wholly to general coördination, and work at nothing but the composition as a totality. If this is the situation, we would not advise devoting any time at all to "technical practice" (that is, practice on unit-movements), for this should always be closely connected with musical outcomes. But such a situation is not common. Almost always trouble will be found in the unit-movements and the combination-movements. This will appear in the form of difficult places in the piece. The pupil should always begin his practice with the piece itself, however, but should pause at its special difficulties, and make these the object of concentrated work. He should now practice the actual notes of the composition, with his attention upon the movements necessary to overcome the problem and to produce a proper musical result. And also he should go through one

or two formal technical exercises designed to help the development and automatization of those movements. He should not, however, stop dead and persist until he has entirely overcome the difficulty, for the skill on which he is now working is relatively simple, and he cannot concentrate effectively upon it for very long. After, at the most, ten minutes he needs a change of work, and this he gets by going on with his piece until the next difficult passage emerges, when it is treated in the same way. Such procedure is efficient for three reasons. (a) It is based on a psychologically correct management of the practice periods. Short periods are devoted to simpler habits, and longer periods to those that are more complex. Thus all work can be done with maximum concentration. (b) Each "technical difficulty" (that is each difficulty of unit-movement or combination-movement) is worked out in the environment of the composition, so that we do not have the baffling situation in which the pupil is able to deal with a difficulty perfectly well when it occurs in a technical exercise, but finds it prohibitive when it occurs in actual music. To put this point in psychological language, each unit-movement or combination-movement is practiced in conjunction with the total coördination of such movements required to play the composition. (c) Technical study is at no point divorced from musical reality. The musical necessity for certain skills is continually before the pupil as he practices them.

THE SUPERIOR EFFICIENCY OF LEARNING BY WHOLE

Closely connected with what we have been saying is the psychological dogma that learning by wholes is more efficient than learning by parts. In other words, the larger the units that we can assimilate, the better. Or, more specifically, it is better to study a composition as a whole than section by section, and very much better than to take it passage by passage.

The reason for this should be obvious. When we study a composition as a whole, we are working simultaneously on all the three levels of habit involved. When we take two passages only, we are working on combination-movements and unit-movements, but not on general coördination. When we take only one passage, we are working only on unit-movement. Always the criterion is the sort of habit that we need to build. If we are weak on unit-movement, then we must confine ourselves to this, and our maximum unit is the single passage. But there is no peculiar virtue in the small unit as such. Indeed, the reverse is the case. The larger the manageable unit, the better we go, because we are exercising a larger array of different types or levels of habit.

So we find here another psychological principle which buttresses our advice on practice and drill. The pupil or class should never be tied down to a routine of technical exercises for their own sake. Nor should special difficulties to be encountered in the song or composition be practiced in advance. The composition should be taken through, either as a whole (if it is simple, such as a grade school song), or (if it is complex) perhaps in its larger subdivisions, *e.g.* the exposition of a sonata. It should be studied as a whole until the more detailed difficulties begin to emerge. As they occur they should claim attention, and drill should be devoted to them, though even so they should not be taken one by one and polished to perfection, for always the procedure is to push on and return again and again, solving all detailed problems in the consciously felt environment and meaning of the whole work.

THE USE OF TECHNICAL EXERCISES

So much has been said and implied about the use of exercises, and it may appear so revolutionary, that we now wish to summarize our findings on the point, for the sake of clearness.

1. Exercises should never be assigned merely because it is traditional to do so, but always for some definite, assignable reason, and to take care of some assignable weakness that shows up. The reason should be clear to the pupil as well as the teacher.

2. Technical exercises should embody and emphasize movement. In practicing them we do not aim primarily and directly at ability to play trills, execute double stopping, etc., or to acquire velocity and suppleness in playing or singing passages. Rather, the aim should always be directed upon the type of movements through which such results are to be achieved.

3. The fact that almost all technical material is of no musical interest is not a drawback. No doubt the ideal technical material is musically beautiful. But it is rarely indeed that a composer definitely combines a specific technical problem with beautiful musical form. The supreme instance of this fusion is found in the Chopin studies, which embody practically the whole technical basis of modern piano virtuosity in compositions of astonishing and brilliant power. Here, of course, we have the ideal situation, where the solution of motor difficulties is directly connected with musical results, and from it we can learn the essential lesson of all practicing, which is that technique is inseparable from music. But ordinarily we must use non-musical exercises which exemplify motor skills.

4. But the non-musical exercise must always be directly connected with a musical aim. The pupil should not work at the trill just for the sake of trilling, but to be able to play a trill which actually occurs in some piece he is studying.

5. Technical exercises can often be devised by the teacher and, if this is done intelligently, they may be much better suited to the pupil and his specific problems than is the pub-

lished material. It is also a good idea to encourage the pupil, under supervision, to evolve exercises for himself, for this helps him to diagnose and comprehend his own difficulties.

6. The building of a complete technical equipment cannot be achieved by any amount of drill exercises. When we read stories of great artists who have devoted years of slavery to such work, we must remember that they were already highly developed and experienced musicians before they began their self-imposed tasks. The almost mythical labors of some artists were effective precisely because their mental grasp upon music was such that they were able to see the musical goal in all the enormous drudgery. To imagine for a moment that we should urge the elementary pupil to copy such examples is absurd. For him the first requirement is the training and expansion of his musical mind, and his technical development follows from this.

In this connection we may revert again to the famous example of Liszt. When preparing for public performance, Liszt was in the habit of devoting many hours to technical exercises, and only an hour or two to the compositions he intended to play. This indeed was psychologically sound enough, for the higher-level skills are impossible without relative perfection in unit-movement. But it is quite an impossible model for the beginner, and for two reasons. Liszt already possessed immense motor control, and in particular his skills in combination and coördination were very far advanced. So what he needed was the added and superfine perfection of unit-movement control. But the ordinary player must work hard at combination-movements and coördinations as well. And secondly, Liszt was able to transfuse with musical meaning technical work that would be hopelessly dull and unintelligible to anyone with a lower musical mentality and a more meager musical experience.

To fortify our position we may remind the reader that some of the greatest artists of the present generation are said never to have used technical exercises, from childhood up, but to have developed their skill wholly by practicing musical works, isolating their difficulties, to be sure, but always seeing them in their musical and motor setting.

MISCELLANEOUS POINTS

There are a number of miscellaneous points about working for technique, on which our analysis casts much light, and which we will now consider.

1. *Slow practice.* — Slow practice is valuable for two reasons. (a) It gives us the best possible opportunity to hear and analyze the effect of every note we play, and every harmonic transition through which we move. Thus it renders musical attention possible. (b) It makes it possible to form and direct each movement, whether a unit or combination movement, with accuracy and precision. Slow practice does not necessarily mean that we make the motions themselves slowly. We do not eliminate those of the ballistic type. But it does mean that we pause longer and take more careful aim between repetitions of the same movement or transitions to another. Thus slow practice means precise and efficient rehearsal of the movements we wish to render habitual, and so is in harmony with the laws of use and effect.

2. *Inexpressive practice.* — An excellent and psychologically correct device is to have the pupil work through his pieces at a uniform *mezzo forte* and an easy tempo, simply playing them from beginning to end without any force or expression. The value of this kind of work is first that it eliminates any emotional disturbance that might confuse the freedom and ease of the motor adjustments and, second, that it simplifies those adjustments themselves, because the complicating factor of

dynamic change is removed. This, to repeat, is an admirable device for consolidating unit-movements, for combining them in serial and simultaneous order, and for securing that general motor setting and coördination which is the highest level of skill. It will be found a most efficient means for mechanizing the piece and clearing up its motor problems.

3. *Practice with hands separate.* — Most piano teachers have rather definite prejudices for or against practice with the hands separated. One experimental investigation has been made on the point, to determine whether keyboard skill is acquired better with the hands together or separate during practice. Its results are somewhat, but not decisively, in favor of practicing first with them separately. If we want to analyze a passage down to its ultimate unit-movements, then evidently we must separate the hands.

4. *Conditions of practice.* — It is exceedingly important that the instrument used for practicing shall be as good as possible. There are few greater and cruder mistakes than to think that any old, battered, tinny piano will do for practice, particularly for a child's practice; or that an inferior violin is quite good enough for the first few years. A fine instrument teaches music by itself. It leads the pupil to appreciate, love, and demand fine tonal effects.

Another point is that practice ought to be carried on in quiet surroundings. The pupil must concentrate on musical meanings, he must hear what he plays, and he must work without distraction, or his practice is greatly reduced in value. The conditions of practice in many conservatories are positively disgraceful, and the students are compelled to do their work in a bedlam of competing noises.

5. *Dry practice.* — By this we mean practice without the pedal on the piano, practice on dumb keyboards, and practice on the organ without the wind. We venture to believe that

in most cases its value is debatable, because it tends to concentrate attention too much on merely motor elements. However, it may be a means of quickening the musical imagination if we insist on the pupil taking pains to hear inwardly the effects his fingers are making. And to some degree it may help to clear up motor troubles.

6. *Correcting wrong notes.* — Wrong notes are symptoms, and need to be attacked indirectly rather than directly. The playing of wrong notes comes from two sources. (a) Lack of musical sensitivity is a prolific cause. Many pupils play wrong notes because they are too careless musically to recognize that any serious error has occurred. They fail to hear, or at least to be annoyed by, their own mistakes, and so they allow themselves to make them. The cure here, clearly, is musical-mental training. (b) Faulty motor habits are the other cause of errors. If the wrong kind of movement is being used and, above all, if the movement is not of the ballistic type — that is, if it is stiff — errors simply cannot be avoided. Granted good musical intelligence on the one hand, and well-directed motor habits on the other, wrong notes will not constitute a very serious problem.

7. *The importance of muscular strength.* — Sometimes the development of strength is made the aim of practice. No doubt if there is pronounced muscular underdevelopment in the hand, arm, or larynx, technical efficiency becomes impossible. But mere strength is never the legitimate aim. If it is desired to build it up, this can best be done by directed exercise away from the instrument, for much of the material used, for instance, in keyboard studies for developing strength is positively dangerous, leading with great ease to overstrains which may permanently ruin the pupil's whole mechanism. Always the teacher needs to be most careful in advising exercises for strength, and too little practice here is far better than too

much. And, in general, the aim should always be at skill and control rather than mere muscular power. For control and relaxation will carry the performer through difficulties that mere muscularity can never solve.

8. *Practicing expression.* — It is sometimes claimed that musical expression can neither be taught nor learned, but that it is something that the performer adds arbitrarily out of his inner consciousness. Our whole discussion of musical training goes to show that this is not the case. Musical expression — the use of the rubato, the choice of tempo, dynamic choice — depends wholly upon our intelligent grasp of the meaning of the musical material. And practicing turns first on gaining this intelligent insight, and then on making it effective in terms of motor adjustment at the instrument or with the voice. Hence it is both possible and necessary to practice expression, which is not something arbitrarily imposed, but arises from the objective nature of the music. Expressive playing or singing is playing or singing in which the various skills are so finely adjusted that they make clear, in sound, the meaning of the music. And as we practice, we develop, not merely motor control, but also a closer approximation to the meaning of the music which we are rendering. Thus practicing should certainly issue in more truly expressive — that is in more and more truly musical — performance.

9. *Practicing the sustaining pedal.* — It is sometimes denied that it is possible to teach the proper use of the sustaining pedal of the piano. This again is a fallacy, based upon an inadequate conception of the aims of music teaching and practicing. The pedal is a special acoustical device which gives us, in the main, two classes of effects. On the one hand, it changes the quality of the tone, for when the dampers are off the strings, they vibrate sympathetically to whatever tone is sounding, and thus the ratios of the overtones are altered and

the timbre changes. On the other hand, it sustains the tones produced after the keys are released. These two effects make possible an endless number of modifications in the sounds produced by the instrument. And hence the proper use of the pedal is a vital element in piano technique, which is simply the ability to use the mechanical resources of the instrument to produce musical effects.

So, to teach pedaling, two things are necessary. First, we must decide with precision just what effects we want. We must know what melody notes we wish to play with the peculiar timbre that comes from taking the dampers off the strings. And we must know just how the harmonic sequence ought to sound. Then, having led the pupil to make his musical choice on a basis of instructed intelligence, we must show him the various skills of manipulation that will produce them — such, for instance, as putting the pedal down just before or just after the tone, or simultaneously with it, changing it several times while a single harmony is sounding, and releasing it at the precisely correct instant. Here, as always, there are two phases of executant skill — the musical conception, and the knowledge of how to deal with instrument to convert it into sound. If we have these two in mind, nothing is more sure than that systematic instruction, issuing in patient and experimental practice will result in more and more expert treatment of the pedal.

PRACTICING IN RELATION TO MEMORIZING

Properly directed class drill or individual practice inevitably leads to the memorizing of the composition. For practice aims at a great deal more than the establishment of certain motor skills. The purpose always is to make these motor skills the medium of musical effects. And it is necessary that we study and analyze the composition, both in its wider

aspects, and in its most intimate detail, in order to set up properly functional goals for our work. And clearly it is by such study as this that we come to memorize the musical material.

All memorizing is essentially an act of intelligence. It is a very false notion that committing material to memory depends simply on the brute force of endless repetition. The more perfectly we can understand what is before us, the more clearly we perceive its sequences of meaning and the relationship of one part to another, the more easily shall we be able to remember it, and the more permanently shall we retain it. This most certainly applies to music, for every musical composition has a definite logical structure, and a musical grasp of this is the basis of successful remembering. So practice that is steered always in terms of musical meaning, and directed toward aims established by the thoughtful and painstaking analysis of the musical material, inevitably and naturally leads to memorization.

But, as we have seen in dealing with musical intelligence, it is quite possible to apprehend musical structure otherwise than in and through the musical medium. And so also it is possible to memorize a composition in several media. For instance, it is quite possible to memorize it by committing the notes and note-combinations of the score by name — for instance, just as one might memorize an algebraical demonstration. Or again, it is possible to use visual imagery very largely as the means of remembering, though it is very doubtful whether many people really have the ability to image the score, or the lay-out of the work on the keyboard, in all detail. Yet again, one may memorize music in terms of kinæsthetic adjustment, so that one movement leads to the next and so on.

But so far we have not reached the distinctive type of musical memory, nor indeed the most efficient method of

memorizing musical material for reproduction. Kovács has demonstrated that the most efficient memorization of musical material is always in terms of its sound. If a pupil can hear how a composition or a passage ought to sound — if he clearly grasps its tonal and rhythmic content — he has the most efficient possible memory and reproductive control of it. It is by this means that we eliminate, as far as possible, that constant risk of forgetting that haunts the public performer, and is especially dangerous where he is relying on the feel of the composition for his cues.

So we return once more to our point that musical intelligence is the apprehension of structure in terms of the musical medium itself. The analysis that precedes practice may introduce all the technicalities and symbols of harmony, counterpoint, and musical form. But these should only be means to the end of leading the pupil to recognize how the structure on which he is working ought to sound. And if this is done, he will not only have an effective goal for the direction of his motor skills, but will also memorize his compositions without deliberate effort.

PRACTICING AND PUBLIC PERFORMANCE

All that we have said about practicing as a means of achieving musical results demonstrates the fallacy of supposing that the artist should leave anything to the inspiration of the moment when he is to appear in concert. Once we grant that compositions need to be studied and analyzed before they can be even practiced effectively — let alone played properly — it clearly becomes as wrong to trust in inspiration when before the audience as it would be to trust in it when presenting the results of careful research to a scientific society. We have worked and studied, and reached certain conclusions in regard to the works to be played, and we have built up the motor

coördinations by which to give these conclusions musical expression. And now our business is to present to the audience the outcomes of our study. And in public performance no amount of inspiration will ever compensate for hard and conscientious and thorough work.

The opportunity for public performance ought to be regarded as a part of every pupil's technical training. For it puts the finishing touches on musical-motor control, and particularly it tests out and helps to establish the habits of general coördination which are the crown of technique. Public performance always involves a very considerable strain. For success, concentration upon what one is doing is absolutely essential. One has certain plans and intentions and one proposes to carry them out. And so, some opportunities to play to audiences constitute admirable training in the concentration which is a *sine qua non* of artistry.

So the teacher and the music school should arrange concerts and promote them so that they are real incentives to effort, not for the sake of advertising, but for the sake of educating. And the teacher who is wise will himself find frequent opportunities for public performance, to avoid having his own technical and musical equipment become rusty.

PRACTICING AS AN AGENCY FOR MUSICAL EDUCATION

We have insisted so strongly that practicing must always be carried on with musical goals in sight, and that technique is simply the ability to produce a desired musical effect, that the converse proposition ought to be perfectly obvious. For the very great majority of those interested in music, practicing has been, is, and will continue to be, the supreme means of musical advancement. Those who have the innate ability or the financial opportunity to devote themselves wholly to composition, more or less ignoring executant musicianship,

are few and far between. Courses in appreciation, and the building up of the talent for listening in general, will carry one some distance, but here we do not have the close and keen analysis on which adequate comprehension of music depends. And so, in the main, musical development must mean practicing for executant musicianship.

Now the point on which we wish to insist in closing is that practice, as we have described it, is precisely training in musicianship. The composition must be analyzed, weighed, understood, and appreciated before it can be properly played. Motor skill is not built up for its own sake, but in order to translate musical thought into sound. And this desire to produce a musical result by vocal or instrumental means forces the student to an attitude of close analysis which issues first in a musicianly grasp of the particular composition in question, and second in a development of all the functions of the musical mind — finer hearing, more delicate and sensitive rhythm, more comprehensive intelligence, and more musicianly feeling.

CHAPTER XIII

AUXILIARY AGENCIES FOR MUSICAL EDUCATION

Musical education is by no means confined to the classroom and the studio. Indeed, the effectiveness and quality of the work done there depends in very large degree upon the standards of musical culture in the community in general, and the richness and variety of the musical opportunities which it affords. Music teaching of the best kind is hardly possible save in a sympathetic and propitious atmosphere. If the art is held in low general esteem, if it is not understood, and if its charm is not generally felt, then we may be sure that its professional adherents will have an uphill battle indeed. One chief reason why, up to the last few years, standards of musical instruction have been much higher in Europe than in America is that there the general population has been trained to a far more genuine respect for and a far exacter appreciation of the musical art. And while this condition is even now in process of being effectively corrected, yet it still remains true that even in our greatest centers, first-rate musical opportunities are far less common, and their accessibility from the standpoint of cost far less, than is the case in European cities such as Paris. Moreover, we have not yet developed in this country any true homes and shrines of music, comparable to Weimar or Bayreuth. And this is something which casts its shadow into every studio and every music classroom in the land. Hence a rounded discussion of our subject calls for some mention of those auxiliary and informal agencies for

musical education which pervasively affect the whole status of our musical culture.

MECHANICAL MUSIC

In mechanical music we have an educational agency of whose possibilities we are only beginning to dream. The phonograph, the mechanical piano, and the radio are now just emerging from the chrysalis stage. They are still relatively crude instrumentalities, in spite of their wonderfully wide distribution. But already the time has come when we can surely see that for better or for worse they are bound to have a profound effect upon the music of the future.

The most immediately striking feature of this modern phenomenon of mechanical music is that it has brought about a unique accessibility for music of every kind. There is not the slightest doubt that to-day the American people are listening to music as they never did before. Whereas formerly only a very few members of any typical community could give a creditable performance, and a first-rate concert was a rare experience, now a vast and increasing number of homes are in a position to hear and enjoy the competent rendering of musical works. And here, of course, we have the necessary condition precedent to the building of a great and worthy musical culture. Opportunity to hear music, to be sure, is not the only thing needful, but it is certainly the most important single necessity, and one for which there can be no substitute at all. But it may be said that the output of mechanical music which finds the readiest sale is always of the cheapest and artistically most worthless variety, so that the phonograph, the pianola, and the radio really work for the debasement rather than the elevation of taste. Such a view is both pessimistic and false. It argues a wholly erroneous belief that the best music will not sell itself. As a matter of fact,

the general and well-authenticated experience of the typical American lower middle class family that invests in a phonograph, points in just the other direction. Such a family usually makes a beginning with the cheapest and most trashy jazz and ballad records, which are repeated *ad nauseam*. But after a while, a timid venture is made into the awful sphere of the "classics" and the family is astonished to find that these can be enjoyed — in other words, that "good" music really is good. And so we find a continually increasing demand for the best material for the phonograph, the pianola, and the radio, which is one of the most hopeful signs and portents of artistic progress in the community at large.

Another point to be considered is the peculiar and gloomy foreboding entertained by various persons that music mechanically produced will shortly supplant performance "by hand." A little analysis readily serves to dissipate this notion, and will, moreover, help to place mechanical music in its proper perspective. (a) When we are dealing with a relatively unresponsive and highly mechanized instrument such as the organ, it is quite conceivable that in the near future devices may be perfected which will do all and more than all that the best technicians can now accomplish. One great French organist is said to have at his command five distinct grades of staccato, but a machine might well develop a great many more. But the case is very different with highly sensitive instruments such as the piano, and still more, the violin. The technical problems of a really fine performance on such instruments are almost endlessly subtle and delicate. Here, in the midst of a mass of harmony, a single note or phrase must ring out. There a body of detail must be thrown into shadow. Or again, the tones that define a melodic curve must be given a touch of higher lighting. And these are just the factors on which first-rate renderings depend, and which are

most completely beyond the range of any mechanism save the human hand. The best mechanical piano-players can yield the general dynamic treatment and tempo variations and cruder shadings of the artist's reading, and this, to be sure, is a great deal. But it is far less than is demanded by the best pianists, whose excellencies really lie in a perfection almost infinitely detailed. (b) But even if all technical problems could be obviated by mechanical means, even if machines could be invented which would do all that a first-rate artist could wish to accomplish, still there would remain the problem of understanding and interpreting musical masterpieces. And this, indeed, as we have insisted almost to weariness, is the central point of all musical training. If all motor difficulties could be eliminated from music, the art would not thereby become vulgarized and easy, for, after all, it is something very different indeed from gymnastics. It is both amusing and instructive to try to picture a Utopia where the greatest music could be produced without any motor travail at all, and to speculate on what music lessons would be like in such a world. The author's own conviction is that they would be immensely enhanced in value and appeal, because the way would then lie easily open for concentration upon the meaning and beauty which are the life of the musical art.

A third major consideration is that mechanical music is of vast potential value for the music student, the music teacher, and the executive artist. For the music pupil it provides opportunities to hear expert readings of great compositions. For the music teacher, whether in the classroom or the studio, it furnishes opportunities for giving pupils models of performances of professional finish. For the artist it provides opportunities for listening to the performance of works he is studying without the distraction of actually playing or singing them.

All in all, then, we may conclude that mechanical music is

the powerful ally and friend of art, and that in the future it is likely to be a primary agency both in raising standards of appreciation in the community, and in making studio and classroom teaching more effective.

CONCERTS

We have already made some mention of the value of concert opportunities, but it may be worth while to revert to the matter here, treating it from a slightly different and more general viewpoint.

1. First we may consider the educational value of the occasional recital by some artist of national or international reputation. Recitals of this kind are very expensive luxuries, and the question arises as to how far they justify themselves, and whether they are not, to some extent, manifestations of a barbaric and simple age, pleased with show and crowded display. Now we must admit — and every musician knows this full well — that oftentimes the actual, intrinsic value of the musical performance put on at so much cost and with such spread-eagle publicity is not one whit better than that given by relatively unknown but faithful and self-exacting artists. From the standpoint of musical culture, such great recitals are chiefly valuable because they advertise music to the masses. Musicians frequently attend them with their tongues in their cheeks. And there is some genuine reason to believe that, as the standards of our musical culture rise, our dependence on these somewhat gaudy occasions — sometimes not untainted with vulgarity — will steadily diminish.

2. From an educational standpoint the artists' series possesses a certain value which is lacking in the occasional recital by the very highest priced virtuosi. This is because in order to succeed it must be based upon a community interest in music which has the virtue of continuity, and so operates

constantly to raise local standards of taste and appreciation. Moreover, it is intrinsically sounder in that by such an arrangement really first-rate performances can be secured at a reasonable cost, without an added outlay of thousands of dollars for a great reputation which is often not backed up by any commensurate increment of genuine musical value.

3. In many respects concerts and soirées by local talent are an exceedingly worth-while element in musical life and musical education. Local pride in, and local support of, local artists has often been the germinating root of the very finest musicianship, which should, after all, not be something exotic, but the product of the soil. There is something very appealing and very noble in an artistry which is content to create the most perfect beauty for a comparatively circumscribed public, without too anxious search for the blaze and golden shower of wide publicity. Some of the supreme music masters have lived such lives as this. We may remember that Bach was satisfied to be only a provincial organist, an example well worth considering. This community interest in local musicians is of vital value all round. For the community itself it means direct contact with music as such, without the sometimes distorting and meretricious medium of pumped-up reputations. For the artist it means openings for those intimate concerts and musicales which are the most perfect and pure opportunities for the creation and expression of beauty. And it tends strongly to foster any and every budding talent, which urgently needs a friendly air. There is no more certain sign of our national progress away from musical barbarism than the steady development of activities of this kind.

MUSIC CLUBS

This study of auxiliary agencies for musical education would not be complete without at least a word regarding the music

clubs which find a place in the life of so many American communities. These excellent organizations are among the finest instrumentalities for promoting musical knowledge and raising the standards of musical taste. They provide opportunity and encouragement for amateurism. They stand essentially for the promotion of music as an avocation at least as respectable as cards and golf. They furnish a small, intimate, and more or less discriminating circle for chamber music, which contains some of the most exquisite gems of the art. And they usually embody a serious purpose to know music better and appreciate it more expertly.

COMMUNITY MUSIC

So far, community music is a hope and a dream rather than an actual and functioning reality. When it amounts to no more than the somewhat antic singing of commonplace songs, its immediate value is small. But its promise is immense. The phrase "community music" should be taken as standing for an ideal no less than that of working out a complete program of musical activities for a local group taken as a unit. This ideal will not have been reached until public school music work, the work of the studio teachers, the concert series, the glee club, choral, and orchestral work, the concertizing by local talent, and the activities of the music clubs are correlated into a single unit of effort to produce an ever rising standard of musical appreciation and to encourage musical productivity in all its aspects.

CHAPTER XIV

THE STATUS OF THE STUDIO MUSIC TEACHER

The status of the music teacher in America is an unsolved and indeed an unrecognized problem of educational organization. That it leaves much to be desired is evident from the most cursory survey of the situation. And the more thoroughly we look into the facts, the more unsatisfactory do conditions appear. The music teacher ought to perform the functions of a responsible, serious, educational leader. But his situation is often, and perhaps usually, such that this is very difficult. It is far beyond the compass of the present work to suggest remedies. But there seems a real value in analyzing the conditions under which the teaching of music is actually carried on. And also it may be helpful to apply the pedagogical conclusions we have reached, to singling out the qualities that the good music teacher ought to possess. In this way the teacher himself may be led toward a more intelligent appreciation of his own problems; and pupils and parents may see what should and what should not be expected in the teachers to whom they commit their musical development and that of their children.

CONDITIONS DETERMINING THE STATUS AND WORK OF THE MUSIC TEACHER

It is unfortunate, but all too true, that if we take the music teachers as a group, they do not compare very favorably in professional status and viewpoint with teachers in other fields.

On the whole there are no definite standards of training and preparation among them. And while there are among them many of very high excellence indeed, it remains true that large numbers of persons profess to teach music who have no artistic insight whatsoever, and who have no right at all to undertake any kind of educational endeavor. Then, too, many music teachers exhibit a striking lack of any broad educational enthusiasm and vision. Their instruction, such as it is, is hack work, and is not consciously directed toward any valid educational goals. They fail to recognize any of the basic pedagogical problems involved in teaching the musical art. Again, we often find a remarkable apathy and even hostility to educational progress among music teachers. In a day when good grade school and high school teachers eagerly welcome pedagogical suggestions, and are willing to try to mold their work in accordance with the findings of educational science, the music teacher's mind is often completely closed to any such notions. He insists on sticking to the rule-of-thumb method by which he himself was taught, modified a little, it may be, by his own experience. Is it not high time for the musical profession to recognize that such unprogressive and, indeed, downright stupid attitudes of mind are out of date?

But while we must regretfully recognize these truths, we should not feel that the primary responsibility for their pedagogical backwardness lies with the teachers themselves. It is the inevitable outcome of certain conditions over which they have little immediate control. The music teacher is pitted against circumstances which are educationally far from favorable, and from these flow the chief defects of his professional status.

1. The public attitude toward music makes the development of an educational consciousness in the music teaching

profession very difficult. The American public as a whole is sympathetically and generously inclined toward music, but as yet it is far from intelligent about it. The great majority of people enjoy music, and are willing to be trained to enjoy it more fully. But in general their attitude is indiscriminating. They are told by the *cognoscenti* that "classical music" is better than ballads and jazz, and they respectfully believe it. But they are not always trained to the point where they actually derive keen pleasure from the best music. They flock in crowds to listen to the playing of certain very high-priced artists or of some well-advertised symphony orchestras. But it is the reputation of the performer rather than the excellence of the performance that attracts them, and when some unheralded person plays or sings to them beautifully, they entertain an angel, but they do so without knowing it. And above all, the general public fails to recognize that worth-while musical training cannot be anything other than a very serious business indeed. Music is regarded as a pleasing but rather trivial social accomplishment instead of a high and complex personal achievement, involving arduous mental training superimposed upon an exquisite physical control.

Now in education, as elsewhere, supply follows demand. And so long as the public fails to recognize the worth and seriousness of musical training, there is a strong incentive toward mediocrity in the music teaching profession. It is easier to give people what they want, or what they think they want, rather than to be constantly kicking against the pricks, and fighting a thankless battle for unappreciated standards.

2. Another basic difficulty for the music teacher is that his work, by its very character, must be individual. Music teaching resembles apprenticeship much more closely than it does school teaching. And the teacher cannot possibly deal

with the large number of pupils that can be carried by the school teacher, using the classroom method.

From this flow two very serious difficulties. In the first place, the music teacher is compelled to work unduly long hours in order to make a living. This can hardly help but lead to a good deal of low-grade teaching, because human endurance is limited. And more unfortunate still, the load of teaching may threaten the teacher's own personal development and artistic progress. In very many cases he finds it almost impossible to steal time for his own practice and study, because all his day and all his energy must be devoted to his pupils. In any other branch of the teaching field both these circumstances are regarded as first-rate evils, leading directly to professional inefficiency. The only reason why they are not so regarded more generally in music-teaching, is that this is not fully recognized as a serious educational undertaking.

In the second place, the system of studio instruction puts the music teacher far too much at the mercy of the individual pupil. He depends for his living on his following, and, until this is stabilized, he can take few chances. It is quite possible for him to face the alternative of compromising his standards or going bankrupt. In school and college teaching, such a state of affairs would be regarded as intolerable. Those members of liberal arts faculties who sometimes complain that the teachers in the music department have no professional conscience or educational outlook would quickly change their tone if they themselves had to pick up a living from the fees of such students as they could attract.

Lack of intelligent public respect for the musical art, and undue dependence on individual pupils, then, are the two great evils with which music teachers have to cope, and are the sources of most weaknesses in their professional attitude and status.

THE STATUS OF THE INDEPENDENT MUSIC TEACHER

The free-lance, private-venture teacher of music is by all odds the hardest hit by the unfavorable conditions surrounding musical education. It is very difficult for him to maintain the viewpoint and status necessary for educational leadership, and he deserves far more credit for his numerous and shining successes than blame for his failures. He combines two incompatible functions. On the one hand, he is operating a private business in a highly competitive field, from the profits of which he makes his living. On the other hand, he is the representative and servant of a great art. What he would like to sell and what his public will actually buy from him are apt to be two decidedly different things. And particularly if he has dependents, a sacrifice of his clientele for the sake of educational and artistic standards means tragedy. He is beset with many difficulties. If his work lies in a small community, or if he has given up any hopes of rising to the top of the profession, he is very apt to be content to jog along in a rut, teaching boys and girls to play a little or sing a little, very occasionally being inspired by the gleam of a remarkable talent, acting as organist at a local church where he plays melodious banalities which require little practice, or at least receive it, and if he does but little good, at least doing equally little harm. In such a career there is a living, sometimes a good living. But it certainly does not spell educational leadership and artistic vision. This is the kind of teacher who is very apt to resent any radical examination of method, or any attempt to hold up high and universal standards of musical training. Such things are very disturbing to the somnolent artistic conscience, and are apt to probe hidden and fairly comfortably healed wounds.

If, on the other hand, the private-venture teacher is ambi-

tious, he is forced to make his way upward through an interlacing meshwork of professional chicane. And his final successful arrival amongst those who can charge forty dollars an hour and turn pupils away by droves is apt to be due as much to ability for intrigue and salesmanship as to musical power and educational insight. We very much doubt whether there is any profession where the dollar standard is more deceptive than in music teaching. For the high rewards go to the forceful advertiser and the skilled maker of connections rather than to the exquisitely equipped but untrumpeted artist.

All this, to be sure, is the dark side of the picture, and we certainly admit that there is another. The private-venture teacher is often astonishingly generous to the pupil of real musical power and ambition, and many a distinguished artist owes much to the devotion of some one of his early teachers. But our point is this. No consistent, broad, steady educational leadership can be expected from men and women working under such conditions. For every move they make in the direction of insisting on harder work and broader study is weakened by the fear that it may lose them a paying pupil, or call into being a dangerous enemy.

THE STATUS OF THE CONSERVATORY TEACHER OF MUSIC

In general the status of the teacher of music who works in a school of music is educationally superior to that of the free-lance, though his financial opportunities are less. Schools of music are organized along three different lines, and each one differently affects the status of its teaching force.

First, we have the type of school where the teachers receive no salary, but are simply provided with studio and practice-room facilities in return for a percentage of their earnings. Here the teachers, in the main, make and maintain their own following. They receive certain benefits from association of

this type. There is the prestige in being a member of a recognized institution. Again, some pupils are brought in by the school's reputation and advertising. Furthermore, the teacher now is no longer a mere lonely entity. He can associate with his professional brethren, and reap certain not insubstantial benefits from them. And if the school is a good one, there will be courses in theory and opportunities for ensemble work and for student recitals better than could be provided by an individual studio. Still, in spite of these advantages, the great drawbacks we found in the position of the private-venture teacher are not effectively removed. Such a school offers palliatives rather than remedies. The teacher still depends, for his following, mainly on his own efforts. And he is still far too dependent on the good will of the individual pupil.

Educationally a long step in advance of this is the type of conservatory which offers its teachers a guaranteed salary, beyond which they can go, but below which they cannot fall. Such a scheme really begins to meet the basic weakness in the position of the free-lance, for it removes the teacher measurably from the tyranny of the individual. To do this, however, the guarantee system must be properly administered. The guarantee offered should be a sufficient living wage, appropriate for a highly trained professional worker. And no pressure should be brought to bear on the teacher to make his guarantee every year, or even over a succession of years. When the guarantee is given under the implicit threat that if it is not made, it will be reduced or the teacher's services discontinued, it loses almost all its protective value, and becomes the instrument of another kind of tyranny. Under a properly administered guarantee system, the advantage is that the teacher is independent enough to set up standards for his pupils, and insist that they be observed. He thus becomes a

real educational and artistic leader, and begins to enter into his true function.

Undoubtedly the best type of conservatory organization is that where teachers receive a fixed salary in return for a stated schedule of work, with perhaps the privilege of supplementing it by additional teaching under the auspices of the school. The faculty of such an institution will not make the money they might as free-lances, but they will have all the freedom from undue influence by individual pupils that is enjoyed by their colleagues in the academic field. This, clearly, is the only status under which the real obligations of the teacher can possibly be discharged. And once the seriousness of musical education is granted, it becomes the desirable condition for carrying on this work.

THE CHARACTERISTICS OF THE GOOD MUSIC TEACHER

We may now try briefly to enumerate the criteria on which the excellence of a music teacher should be judged. Of course, no such elaborate scheme of rating as is used in the public schools is possible, but certain crucial points can be raised by which parents and pupils may form some correct estimate of a teacher's value, and by which the teacher may examine himself.

1. The teacher must be a musician. That is, he must possess a trained musical mind, and be able to use it in the production of some kind of musical results. He must be an excellent and critical listener, and either a good performer or a composer, or both. There are two reasons for this requirement. (a) Only a trained musician can judge musical results and maintain musical standards. Elementary music is not like elementary algebra. One need not be much of a mathematician to decide whether a simple problem has been worked correctly. But one must be a good musician to diagnose the

excellencies and defects of the performance even of an elementary pupil, for listening itself is an act of cultivated skill. (b) Only an experienced musician can diagnose the motor difficulties which are the barriers to the development of technique, and point the way to their solution.

2. He must be a growing musician. That is, he must be able at this time to produce better musical work of his own than he could one year or five years ago. The musician who is not growing is almost certainly in a rut. And the music teacher has to deal with such constantly shifting individual difficulties and differences that only constant personal growth can keep him abreast of his work.

3. He must be an enthusiastic musician. The good teacher is one who produces in his pupils a love for and interest in music, which is the only avenue toward understanding and mastering it. The ideal is high musicianship suffused by a glowing, forth-putting, enthusiastic personality — salesmanship for high artistic ideals and achievement.

4. He must not be content with teaching technique, but must always aim at teaching music. He should be one who strives to bring his pupils into contact with all phases of musical culture and who encourages them to seek wide musical experiences. Instead of making them pianists, violinists, or vocalists in the first instance, he should seek to make them musicians.

5. His lessons must be real lessons, pedagogically sound and properly directed. The teacher to be avoided is one who merely assigns, hears, and apathetically comments upon pieces, exercises, scales, and studies, without giving any evidence of an educational aim. The good music lesson is always a means of guiding and rendering more effective and far-reaching the pupil's own processes of learning. The properly managed lesson should involve, in some form, the

factors of motivation, mental orientation, motor diagnosis, and the maintenance of standards.

6. He should lead his pupils into proper habits of practice. Indeed, a music teacher may be judged largely by listening to his pupils at their practice. If they work mechanically, with thoughtless, unintelligent repetitions, he is not doing for them what he should; and they are making no progress. If they study carefully and thoughtfully, listening to what they do, aiming at musical goals, and experimenting with motor means, then, though their progress may seem slow, it will be certain and secure, and the time will come when their musicianship will be a credit to them and their instructor, and a pleasure to their friends.

From all that has been said, it is very clear that the music teacher should not be judged by his general reputation, and still less by the fees he can command. The criterion for his work is always his ability to realize those educational results which we have analyzed in detail and seen to be necessary for musicianship.

CHAPTER XV

STAGES IN MUSICAL DEVELOPMENT

In the present chapter we are to attempt to outline what seem to be the normal stages in a well-directed course of musical education from childhood up. We approach the subject with a good deal of diffidence, for no reliable and properly established norms exist, and the state of our scientific knowledge about the manifestations of musicality at the various age-levels is most unsatisfactory. Still, something may be gleaned from what we know of mental development in general, supplemented by our findings in regard to musical psychology and pedagogy. We strongly feel that the attempt to outline a feasible scheme of musical education is well worth while. Most people never have serious consideration given to their musical training till it is well advanced. The child's first introduction to music is usually entirely haphazard. And the idea that his training ought to follow some sequence rarely occurs at all to his parents. He is sent to a teacher, who is chosen for no very good reasons, and then perhaps transferred abruptly to another, because he does not seem to be making satisfactory progress, or simply because his parents have tired of their first choice. Changing teachers involves changing "methods," and much time is thus wasted. And what is worse, bad habits are formed, and no consistent orientation to music is built up. If the child finally turns out to be a capable musician, whether professional or amateur, it is a matter of luck, not management. And so we feel that while a final and

authoritative scheme of training may have to await a great deal of investigation and comparison, it is quite possible for us to make some suggestions that will lead to much better results than the ordinary hit-or-miss, completely unintelligent arrangement.

MUSICAL DEVELOPMENT IN THE PRE-SCHOOL PERIOD

Let us begin with the pre-school period, up to the age of six. All students of mental development recognize the great importance of these years, in which are laid the foundations of character and the bases of later likes and dislikes. The proper aim for whatever musical education may be possible during these years is simply to set up in the child a liking for and interest in the art of music. Ultimately this will be the basis and drive for his future progress. Many persons who later on turn out to be unmusical, and perhaps even come to show a dislike to music, have acquired a prejudice during this period of life. And so it is important to use all the tact and care we can to make musical activity seem interesting and desirable to the little child.

Early influences undoubtedly have much to do with turning the child toward or away from music, and making it seem to him either a natural and appealing avocation, or a matter of indifference, or even repugnant.

1. The most powerful by far of these influences is that of the home. The general characteristics of a home environment which favors later interest and achievement in music seem to be as follows. The home should never vulgarize music. With the mechanical means now at our command, and with the widespread ability to play jazz and low-grade music generally with some facility, it is easy to do just this. A thorough exposure to bad music, badly and crudely rendered on bad and cheap instruments, is certainly enough to give a little child a

thoroughly defective attitude which later on may be difficult or impossible to break up. The ideal home from the standpoint of musical development is one where fine music is respected and loved, where opportunities for producing it are seized and enjoyed, whether or no the parents or older children are capable of actually performing it. Then again, the home should never surround music with pains, penalties, and restrictions. It may at times be necessary to check the child from pounding on the piano, and from insisting on playing a duet with some guest. But this should be done with tact and gentleness, and as part of his social training. He should never be made to feel that the piano is forbidden to him, and though the Victrola and the radio may be beyond his power to manipulate without causing damage, the pleasure of listening to them should be his on request. More positively, the ideal musical home should provide the child with opportunities of hearing good music well performed. The mechanical devices can serve a good purpose, but, after all, nothing can equal the personal appeal. If either or both the parents play, this is ideal. They need not be accomplished artists. They may be able to play no more than simple hymn and song tunes. But if they do as much as this with sincerity and feeling, an unmistakable message is conveyed to the impressionable mind of the child. The playing and singing of guests, too, often has a very deep effect. And in general, the ideal situation is where the young child is led to see that music is a natural source of noble pleasure.

2. Good kindergarten work, too, should be saturated in the spirit of music, and this can greatly help to prejudice the little child in the right direction. The pianist is a most important figure in the kindergarten. She may not have great executant skill, but, above all, she ought to have true musical feeling and to be able to express mood in her playing. Children are far

more sensitive to the emotion and suggestive power of music than many adults at all suppose. And amongst the unlisted lessons of a first-rate kindergarten the discovery that music can express a vast range of feeling, from grave to gay, often ranks very high indeed.

3. The church is yet another musical influence either for good or evil, in the lives of many children. Here, once more, the aim is to orient the child toward good music, and to arouse in him a positive interest and liking that may not be very deep or strong, but that is a promise for development. Some church and Sunday school music is so perfunctory and negligible generally that it tends to vulgarize rather than raise the taste and interest of the hearers. But our churches are becoming increasingly aware of the vast value of music in the service, and this value is for the children as well as the adults. For many quite little children, the organ is a singularly appealing instrument. It is large, its manipulation is spectacular, and its tone is satisfyingly loud. A church organ has without doubt been a prime agency in the early musical conversion of many a young child.

4. Miscellaneous musical influences that bear upon the life of the pre-school child are so numerous and varied that we cannot attempt to discuss them individually. Always the principle is that music should come to him as something of worth, something of dignity, something impressive and appealing and desirable. As a special agency which we cannot refrain from mentioning, on account of their surpassing interest and educational value, is the winter series of young people's orchestral concerts given in New York by Walter Damrosch, and those of Schelling, for children. The experience of attending these concerts has, to the writer's knowledge, deeply affected the musical development of many children.

Such then are the agencies through which the legitimate

pre-school aim of musical education may be achieved. And early talent and promise should always be estimated in terms of this aim. If the child shows some discriminating interest in music, if he seems to like to listen to a performance even after the novelty of watching it has worn off, if instead of thumping he picks out and listens to tones on the piano, if he welcomes musical opportunities, and if he seems to think about and recall musical experiences, then it is extremely probable that he possesses a talent of some kind and degree. At the same time, the absence of such signs should not be discouraging. For it is not yet possible to tell with any certainty whether or no the child is "musical."

In summary we may say that while musical talent is without reasonable doubt hereditary, the fact remains that early environment has very much to do with determining development.

MUSICAL DEVELOPMENT IN THE PRE-ADOLESCENT SCHOOL PERIOD

Musical development from the time of school entry to the oncoming of adolescence seems to constitute another fairly well-marked cycle. The following seem to be the chief points to bear in mind regarding it.

1. Orientation to and interest in music now becomes much more definite. The beginnings of a passive repertoire make their appearance. The child comes to love certain compositions, and later there arises the definite wish to play or sing them, if his musical training is continued. He has now reached a stage when it is possible for him to attend formal concerts, and this is an experience which should not be denied him. In providing him with opportunities for listening, the aim is now more than merely to arouse a positive interest and to avoid distaste. For he begins to be able to appreciate and understand beauty more specifically, and to be affected by it.

To some children there are compositions which seem poignantly beautiful, which haunt them, and which affect the whole course of their later musical development.

2. This is the period when the school commences the task of formally introducing the child to music study. There is little to add here to what has already been said in this connection. A good public school music course, although attuned to a non-selected group, is yet a very great asset in the musical training and experience of the most highly talented child. For it supplements studio instruction in instrumental music precisely where that is weakest. It trains the child to sing — a most valuable factor in the education of a musician; it provides ensemble opportunities; and it gives a broader approach to music as such than can the ordinary studio.

3. This is the period for beginning music lessons. The first concern here must be the choice of a teacher, and this is an extremely important and serious matter. It is wholly wrong to suppose that any musically illiterate hack who can name the notes and "hear" pieces, scales, and exercises will do. Money paid to such a person is wasted at the best, and very probably invested in false development. For the young child, the best, the most sympathetic, most understanding, most inspiring, and most musicianly teaching is none too good. But there are difficulties in the way of securing a first-rate teacher. For one thing, his services are probably expensive. And it may be that he will not be interested in small beginners. The best solution wherever possible is to secure the services of young teachers who have recently graduated with some master of recognized ability. They probably possess some genuine musicianship which helps to compensate for any lack of experience. And it will be natural to move from such a teacher to his or her master later on, and so secure continuity of educational progress.

Turning now to the lessons themselves, they should have, in the main, the following characteristics. Music of some genuine interest should be assigned. In its literature there is abundance of suitable material, sometimes by the greatest composers. And certainly it is unpardonable to use the outrageous trash that some teachers inflict upon their pupils. The pieces should be assigned in accordance with the general principles we have laid down, and should be practiced always in terms of their musical meaning. Few exercises should be used — perhaps even none at all. There should be no insistence upon posture or carriage of the hand. In general the aim of motor technical development should be the avoidance of bad habits rather than the drilling in of good ones. Motor diagnosis should begin as a safeguard against vicious development rather than as an elaborate and exacting study of proper movement. And always the attention of the pupil should be concentrated upon musical meaning. A good start may be made now in musical-mental development, and this is far more important than motor skill which will come later of its own accord if the pupil has the right attitude. The pupil can make considerable advances toward a grasp of tonality. Scales should be begun, and studied for their sound. Transposition by ear is a feasible project. And the perception and appreciation of good tone can begin to be developed. If the teaching is rightly done and is of an inspirational type, the problem of the length of time to be spent on practice will tend to solve itself, for music will be what it should be at this age, a hobby and a delight rather than a task and a burden.

Even in dealing with the greatest talent, it is a prime mistake, at this stage, to ignore or slight general schooling. A little postponement of musical specialization now will pay later, for it will be invested in mental balance and breadth,

and in social skill and poise and understanding of and ability to deal with others.

MUSICAL DEVELOPMENT DURING EARLY ADOLESCENCE

This is the time of life when any musical talent that the child may have is likely to bloom suddenly toward full maturity. So far his reactions to music have been definitely childish, although if he has natural musicality, it is likely to have manifested itself unmistakably, both along the line of a general and increasing interest and in any tests of musical talent that may have been given. But with adolescence there is a distinctive all-round development, both mental and physical, that deeply affects musical interests. Compositions that heretofore have been played thinly and without any great range of expression, now take on a new meaning. The pupil finds in himself a desire to make them vehicles of his emotion, and to enter into and bring out their beauty. And his quickly growing body makes it possible to manipulate the instrument with quickly increasing power and grasp.

The most central change at this period seems to be a marked development of the motives leading to musical enjoyment and the study of music. The individual now becomes much more fully socialized, and so his desires for distinction and self-display are intensified and long-circuited. And he awakes to a new perception of and feeling for beauty. His emotional capacities are quickened, and music speaks to him with a new voice. Many musical people can remember how a recognition of musical beauty, and a sudden realization that they could sing or play with genuine expression, came to them as abruptly and definitely as a conversion, while practicing some passage. One moment it was just a passage which they were practicing with the rather shallow interest of the child; the next it was transformed into living beauty. And after such an experience,

music is never the same again. The vision has come to stay.

All this means that musical education can now be much more serious and positive in its aims than before. So far a positive and favorable orientation to music has been achieved, a growing recognition of and love for beauty has been cultivated, and wrong motor habits have been avoided. Adolescence is the time to begin to build on these foundations, and really to lead the pupil into the inner mysteries of the art.

About this time a change of teachers is likely to be desirable. The pupil himself will benefit by the work of a more advanced and exacting teacher. And most music teachers would rejoice to secure anyone so well grounded and fitted for rapid advance toward genuine musicianship as an individual whose training has been along the lines indicated. If the first teacher has been a pupil of some prominent master, this transference will be easy and natural and will cause no hard feelings.

The general content of the lessons can now take in most of the points we have described in the preceding pages. The aim can be the definite and positive promotion of musicianship. The pupil can be led to analyze and study compositions with real care and precision, and to build up his own conceptions of them. On the motor side, there can also be a great advance. During adolescence we find a development of neuro-muscular control, and though there may be some general clumsiness, the individual becomes capable of building special motor skills to high efficiency. If his previous training has been properly managed, he has no bad habits to unlearn, and also will have developed a distinct feeling for good habits. And his technical advance should now be very rapid. There is no doubt that many of the celebrated difficulties of instrumental technique are simply outcomes of bad early training, on which is superimposed badly directed practice.

Early adolescence, too, is the period when the study of tonality may be carried further, when chord study may begin, and when the student may be led toward the commencement of harmony.

Once more let us emphasize the importance of keeping the student in high school, even though he now definitely looks forward to a career in professional music, and even though he has talent that may verge toward genius. It is just the exceptional person who needs the social contacts and the humanizing influences of secondary education. An artistic career, after all, involves personal contacts and the ability to manage one's self well in relation to others. And time spent on gaining these abilities, even though it may delay one's debut a year or two, is far from wasted. Above all, parents, teachers, and the pupil himself should never imagine that musical development must take place at a certain fixed period of life, or otherwise never come in fullness. Experience tends to show that musical development may be delayed for many years, so long as no mal-development goes on, without any prejudice to its final consummation beyond, of course, postponing it.

Three years of such training should see the pupil well on the way toward musicianship, with a good insight into music, which can later be capitalized in theory courses, a well-developed basic technique, and a broad musical experience.

THE MUSICAL DEVELOPMENT OF THE CONSERVATORY STUDENT

Most schools of music would be very happy if they could secure many pupils trained as we have suggested. For the true aim of a conservatory of music should be to build up in its students a really respectable, broad, and functioning musicianship, which will enable them to take rank as worthy professional musicians, or serve as a firm and adequate basis for still more advanced study. Entrance requirements which would

make such an aim possible of achievement should include the abilities we have mentioned. The entering student should bring an interest and love for music. He should already have had wide musical experiences. He should have brought his musical insight and intelligence to a fair pitch of proficiency. And in technique he should have established most of the proper habits, and have discarded or never acquired the wrong ones. For such a pupil a good conservatory can do very much. Within two years he should be composing music with satisfaction. By the end of his course he should be able to play or sing with artistic finish and distinction, and have a repertoire not limited to the few pieces on his senior recital program.

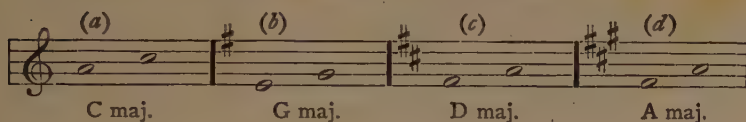
Ordinarily, the situation is very different. The conservatory has usually to do a good deal of work of intermediate or lower grade. Stages which we have indicated as proper to early adolescence have to be taken up, and though the pupil may pass through them more quickly now, much time is wasted. The reason is that most music students never come in contact with any consecutive plan of training till they come to the conservatory, and so are in the position of college freshmen without a high school course. The school has to take care of the situation as well as it can; it is so familiar that we hardly recognize the educational anomaly and misfortune of it.

It is true that the student of good ability and intelligence who comes to the school able to play or sing a little, but essentially untrained in music, can do a great deal in three or four years. He can build up some genuine skill in composition. And he can be coached into putting on a creditable senior recital. But, of course, his musicianship is bound to be narrow and somewhat precarious. What he cannot do is to build up a sweeping command of the musical medium. But with three or four years' expert guidance in a good conservatory this really should be possible to the already well-prepared pupil.

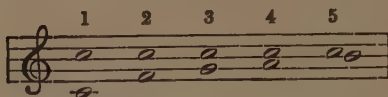
QUESTIONS AND EXERCISES

CHAPTER II

1. Why is the expression "a good ear" misleading?



2. In each of the above four cases play first the scale indicated, and then the two notes of the interval.
 - i. Repeat till you clearly perceive the identity in effect of (a) and (b) and the difference in effect of (c) and (d), in spite of the difference of the notes in the first case and the identity of the notes in the second.
 - ii. Show that key or tonal environment determines the effect of intervals in music.
 - iii. What is the significance of this fact for musical education in general, and what does it suggest as to the proper use of scales in musical training?
3. Test your power of absolute pitch memory by trying to name notes that are played on an instrument you cannot see.
 - i. What kind of practice would probably increase your efficiency?
 - ii. Do differences in timbre increase the difficulties of absolute pitch memory? *I.e.* is it harder to recognize notes sung by an unfamiliar voice or played on a strange instrument?
 - iii. Do your best to determine introspectively on what cues you rely in trying to name notes as you hear them.
 - iv. What is the relation of tonality to absolute pitch?
 - v. List and discuss the possible values of great efficiency in absolute pitch memory for a working musician and for a public school music group.
 - vi. Is the possession of highly efficient absolute pitch memory an index of musical ability?



4. The above five chords represent increasing degrees of dissonance. Review the material on this topic in the text, and practice with the above chords till you are able clearly to discriminate the three factors which determine consonance-dissonance. Does your piano tuner use any of these factors in his work?
5. Why does the same note sound differently when sung by different voices or played on different instruments?
6. Discuss in detail the importance of being able to discriminate fine shades of timbre or tone quality for the vocalist, for the class in singing in the public schools, for the violinist, for the pianist, for the listener at a concert, for the music teacher.
7. On the basis of the psychological principles formulated in the text work out as many practical suggestions as you can, showing how the power of discriminating tone quality can be developed (a) in public school music, (b) in studio teaching.
8. The two following procedures will serve the dual purpose of illustrating what is meant by musical imagery or "musical thinking," and of roughly testing your own abilities in this respect.
 - i. Study the score of an unfamiliar hymn tune for three minutes. Then have a friend play several unfamiliar hymn tunes to you. Can you pick out the one you studied? Does it sound as you thought it would?
 - ii. Listen to the accompaniment of a familiar song. To what extent does it sound incomplete, and to what extent do you imaginatively complete it by thinking the solo part?
9. Show that well-developed musical imagery is of the utmost importance for listeners, performers, and composers.
10. Suggest means for developing the power of musical imagery (a) in public school class groups, (b) in studio teaching.
11. Discuss the relative advantages and disadvantages of using (a) formal drill material, (b) actual musical content, in so-called "ear-training."

CHAPTER III

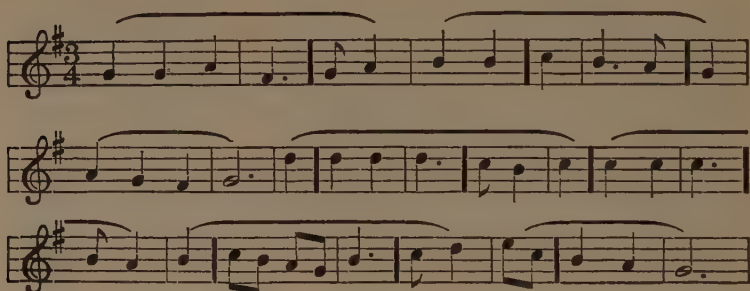
1. Bring together as many facts as you can which indicate that musical rhythm depends on our feeling of muscular pulsation. What instances do you know of the occurrence of rhythm in arts other than music? What do these facts indicate as to the fundamental psychological task of teaching rhythmic apprehension? Suggest methods for teaching rhythm (a) in public school music classes, (b) in the studio.
2. Collect from music familiar to you instances of the difference between *Takt* and phrase-rhythm. Select phonograph records of a march, a waltz, a two-step, a symphony, a ballad song, and an operatic aria; count aloud the beat of the *Takt*, and note how the melodic elements or phrases fit into the bar-beat, forming various patterns. Note especially the pattern of beat and phrase produced by syncopated jazz selections. Select some rhythmically simple phonograph record such as the "Blue Danube Waltz"; count the bar-beat aloud, and at the same time tap out each melody note, thus:

.	taps
1 2 3 1 2 3 1 2 3 1 2 3 1 2 3	counts
(first five measures of the "Blue Danube")	

3. Show that rhythm is more important than time in music. This may be made clear by the following simple experiment. During congregational singing of a tune such as the Doxology, quietly count the *Takt* to yourself. You will almost always notice a decided pause at the end of each line. Note that this distortion of the time is quite tolerable so long as it does not interfere with the rhythmic coördination. Note too that when the tune is put through in strict time it seems hurried. Why is this?
4. Play pianola or phonograph selections (a) much too fast, (b) much too slowly. Analyze the factors that make them seem "too slow" or "too fast." What sets the standard for an ideal tempo?
5. Analyze the relationship between rhythm and tempo. What can the music teacher learn that will be of practical help from this relationship.
6. Suggest methods by which the public school music teacher and the studio teacher might seek to develop rhythmic apprehension in a pupil in whom it was seriously defective.

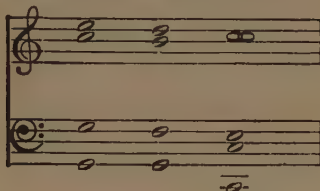
CHAPTER IV

1. Show that the distinction between "practical" or "applied" and "theoretical" music arises out of administrative convenience in arranging courses of study at schools of music rather than out of the essential nature of the subject itself.
2. Analyze the psychological difference between musical intelligence and the kind of intelligence exemplified in mathematics.



3. The above is an exercise which illustrates the psychological principles of melodic intelligibility and the proper interpretation of melody. Play or sing the tune written out ("America") (a) making pauses at the end of each curved slur, (b) making pauses at each vertical double line. The first rendering (a) recognizes the proper subdivision of the tune into its melodic units. Observe that rendering (b) makes the tune nonsensical though the notes remain the same. Try this with three other melodies, choosing some that have no words attached.
 - i. How does this show that a melody is something more than a mere collection of notes?
 - ii. What is meant by saying that a melody is a unit with a "beginning, middle, and end"?
 - iii. How do we sense the unity of a melody?
 - iv. List and discuss the important practical inferences that should be drawn from the facts exemplified above by (a) the public school music teacher, (b) the studio teacher.
4. Show how the above facts bear on the proper interpretation and rendering of melodies.

5. Discuss the best methods of training pupils to avoid and dislike the singing or playing of false melody notes.



6. Show how the above progression exemplifies the fundamental principle of harmonic movement.
7. What is the basic difference between classical and modern music with respect to harmonic structure?
8. How extensively should students specializing in vocal and instrumental music study harmony and counterpoint?
9. Discuss the methods by which the teacher (a) in the public schools, (b) in the studio, may lead elementary pupils to grasp harmonic movement.
10. Make an outline analysis of several compositions that are available as pianola or phonograph records or otherwise, if necessary enlisting the help of a trained musician. Take samples of several forms, *e.g.* the first movement of a sonata, a fugue, a rondo, a song, a rhapsody, an air with variations. The analysis need not be complete in all details. Study the analysis till you are able clearly to recognize the various parts of the musical structure as you listen to the composition.
 - i. Do you think the composer formulated such an analysis before beginning to write the composition?
 - ii. If not, how did he come to build the structure of sound that your analysis reveals?
11. What values are there for the performer in perceiving the structural relationships of the music he is rendering?
12. Do these values hold also for the intelligent listener?
13. Should music pupils be required to work out a formal analysis of the compositions they are studying? Why?
14. Show how song and dance forms may be used to begin to give the youngest pupils a sense of musical structure.

CHAPTER V

1. To what extent does popular enjoyment of jazz and the poorer ballad songs depend on the extrinsic elements of association and suggestions? Do intrinsic sources of musical feeling enter importantly in such cases?
2. Explain the heightened receptivity of popular audiences to music which is said to express the emotion of love. Should such factors be capitalized or ignored in the training of music pupils (*a*) in the public schools, (*b*) in the studio?
3. List as many methods as you can by which associative and suggestive factors may be used to make music more interesting and enjoyable for public school pupils.
4. What dangers are there for the studio teacher in an emphasis on these extrinsic factors in musical enjoyment?
5. What should be the central educational aim in employing extrinsic sources of musical feeling?
6. Show from your knowledge of the structure and response-tendencies of the human body that music is inevitably more closely and definitely connected with emotion than the visual arts.
7. Analyze the relation between musical feeling and musical intelligence.
8. Why is it demonstrably and certainly wrong to "sentimentalize" the performance of a musical composition?
9. Why is the emotional response of a highly trained musician rarely a mere diffused mood, however powerful, of joy, gloom, exaltation, etc.?
10. List and discuss as many devices as you can for training pupils to respond to (*a*) the beauty of single notes, (*b*) the beauty of chords, (*c*) the beauty of melody, (*d*) the beauty of musical form.
11. Show that in building up the responses just mentioned we have an essential step in musical education.
12. Discuss the statement that in rendering music with proper expression the aim must be to bring out the composer's intention.

CHAPTER VI

1. What are the chief types of musical test material?
2. What is meant by saying that the Seashore tests are chiefly tests of

acoustic acuity? If possible, secure and analyze a set of the Seashore tests.

3. In what respect is the Seashore rhythm test open to criticism? In view of our discussion of rhythm, what would be the nature of an adequate rhythm test?
4. Why is it probable that pupils who do well on the Seashore tests will possess musical ability? Why are striking exceptions apt to occur?
5. Why is the ability to apprehend melody a very good index of musical ability?
6. What is the relationship of musical ability (*a*) to general intelligence, (*b*) to physical excellence?
7. About what proportion of totally unmusical persons would you expect to find in the general community? Would public school music programs have any value at all for such persons?
8. Explain what is meant by saying that a good set of musical tests will help the teacher by showing what abilities must be trained in building up musicianship.
9. Discuss the practical utility of the Seashore tests or other tests of musical talent (*a*) for the public school music teacher, (*b*) for the studio teacher.

CHAPTER VII

1. Take one of the compositions you analyzed in connection with Chapter IV and show that any listener who wishes fully to "appreciate" it must grasp clearly (*a*) its rhythmic pattern, (*b*) its melodic structure, (*c*) its harmonic structure, (*d*) its general plan.
2. Discuss the statement that the appreciation of music is best taught by participation in music.
3. Why does the detailed study and practicing of the intricacies of a great composition lead to an improvement in standards of appreciation that apply not only to the composition being studied but to music in general?
4. Why are familiar compositions commonly enjoyed more than those that are wholly new?
5. Why is it necessary for the teacher who wishes to develop musicianship in a pupil to teach him to hear critically and intelligently?

6. List as many of the activities of the public school music teacher as you can that depend on her ability to listen skillfully.
7. Show that the studio teacher who is not a skilled listener can do little to promote musicianship in his pupils.
8. Why do reputation and bravura display often produce greater effects on audiences than fine and worthy musicianship?
9. Make as many concrete suggestions as you can for using (a) the associative connections of music, (b) visual imagery connected with music, for developing more skilled and adequate listening.
10. Analyze the importance of setting up in the listener the proper receptive mood in order to have worth-while listening (a) at concerts, (b) in school classes, (c) in social groups listening to drawing-room performances or to mechanical music.
11. Pick out from among your acquaintances listeners who are primarily (a) intellectualistic, (b) motor, (c) emotional. What means would you employ to develop in them a more rounded skill as listeners? To what type do you yourself belong?
12. Analyze the factors which most commonly operate to produce musical enjoyment in you. What are your own chief excellencies and defects as a listener?
13. Discuss the values and limitations of the various musical opportunities in your community in developing skilled listening.
14. Show why the ability to read music importantly helps the listener.

CHAPTER VIII

1. What truth and error is contained in the statement that the public school music teacher should not try to develop technique in pupils?
2. Show that trying to teach technique apart from the musical significance of the material to be performed is like trying to teach a language without giving pupils anything to express in it.
3. Discuss in detail the advantages of presenting technical problems always as musical problems, *i.e.* problems of making passages "sound right."
4. What are the characteristics of the type of eye movement found (a) in the good reader, (b) in the poor reader?

5. Work out a scheme of drill and practice for developing proper eye movement in an advanced pupil who is a poor reader.
6. Briefly review the chapter on rhythm and show that good technique involves the sensing and expressing of the groupings of the music in the muscles operating the instrument or the vocal muscles, including the breathing muscles.
7. Explain what is actually meant by "relaxation" in musical technique.
8. Analyze the rôle of posture, controlled movement, and ballistic movement in several of your motor skills (*e.g.* tennis, billiards, golf, etc.)
9. Analyze your performance of some musical composition to find out the rôle of these three types of movement.
10. Explain why your performance might be improved by making such movements more free, and by increasing the proportion of ballistic movements.
11. List and discuss several fallacious ideas you have encountered with regard to the type of movement and the control of movement involved in the technique of the piano, the violin, the voice, etc.
12. What advantages are there for the public school music teacher and for the studio teacher in having some scientific knowledge of the type of movement involved in motor technique?

CHAPTER IX

1. Why is it worth while to give some training in harmony, counterpoint, and form even to those who will never develop skill enough to compose music?
2. Show that much teaching of harmony and counterpoint resembles the teaching of algebra. Why is this unfortunate?
3. Compare proper training for composition to learning a language by the direct method.
4. Analyze and criticize from the pedagogical standpoint some textbook of harmony with which you are familiar.
5. Show that all legitimate teaching of harmony, counterpoint, form, etc., must depend ultimately on building the ability to hear and image the correct and desired effects.
6. Outline plans by which the teaching of "theoretical music" may be linked with "applied music" to develop musicianship.

7. Show that the composer's musical imagination is the outcome of detailed and laborious training.

CHAPTER X

1. In what respects may public school music be of benefit (*a*) to the musical profession at large, (*b*) in leading to better methods of teaching music in the studios, (*c*) to the pupil who intends to make an intensive study of music, perhaps with professionalism as his goal?
2. Show why the public school music teacher must be an accomplished listener.
3. Why are principles more important than methods for the public school music teacher?
4. From your reading of this chapter and Chapter VIII show in what respects training to read the score is valuable in musical education.
5. Show that the power to read the score is an organized hierarchy of musical-mental and muscular habits.
6. Outline a complete schedule of musical activities for a good-sized high school emphasizing (*a*) musical-educational values to be achieved, (*b*) procedures indicated by the values aimed at.
7. Discuss the relationships between public school music work and the local private teachers.

CHAPTER XI

1. List as completely as you can the motives which lead pupils to study music and discuss the means by which the teacher can capitalize and redirect them in the interests of higher standards and better work.
2. Discuss the reasons why children so often dislike music lessons. How can the teacher hope to overcome such antipathy?
3. To what extent is the studio teacher responsible for "making the pupil work"?
4. Should the teacher insist on extensive technical drill against the pupil's will? What are the pedagogical principles underlying the assignment of technical drill?
5. Show that the crucial test of a music lesson is its effect on the quality and efficiency of the pupil's practicing.

6. What are the educational values involved in the teacher's playing to the pupil?
7. Formulate the working principles underlying the teacher's selection of compositions for the pupil to study. To what extent should the teacher follow the pupil's preferences? Suggest means by which the teacher may guide the pupil's preference.
8. In view of our analysis of musical feeling in general, and of the proper use of expressive devices in particular, to what extent should the teacher follow the pupil's own "interpretation," and to what extent should he impose his own?
9. Show the importance of movement-analysis and motor diagnosis by the teacher as a means of clearing up the rendition of a piece of music.
10. Formulate criticisms of faulty music lessons which have come to your attention, showing where they violate educational principles.

CHAPTER XII

1. Take any composition you can perform and list the unit-movements and combination-movements involved in it.
2. What values would analysis such as the above have for music pupils and music teachers?
3. Suggest as many devices as you can for building up a coördinated, unified motor grasp of a composition as a whole.
4. Take any volume of technical material you know (exercises, studies, vocalises, etc.) and analyze it with the following points in mind: (a) What pedagogical values does it contain? (b) What pedagogical limitations does it reveal? (c) Should the material in the volume be assigned piecemeal in connection with difficulties as they actually occur in the study of compositions, or should students be "put through" the whole volume?
5. What is the importance of muscular strength in motor technique?
6. Suggest psychologically correct devices for clearing up wrong notes. Make this concrete from your own music study.
7. Why is it best to allow pupils to fumble through compositions for themselves, at first, making many mistakes, and clearing these up little by little?
8. List and discuss the various values of slow practice.

9. Show that excessive concentration on pure technique may tend to defeat its own purpose.
10. Show that properly directed practice and drill directly increase musical grasp and insight.
11. Show the objections to a practice schedule of the kind that calls for so many minutes on "technique," so many on scales, so many on studies, and so many on "pieces."
12. Work out an intelligently planned approach to the problem of the distribution of practice periods for the best musical and technical results.
13. Why is it of the highest value to practice always on a first-rate instrument?

CHAPTER XIII

1. In what respects can mechanical music be of assistance in musical education, and what are the chief dangers implicit in it?
2. Discuss the value of some first-rate recital you have recently attended in raising the standard of taste in yourself and others.
3. Suggest means by which all the educational values implicit in your local artists' series might be capitalized.
4. Show in what respects the high musical culture of such a country as Germany probably depends in part on the wide diffusion of amateur chamber music. To what extent might we hope for a similar development in the United States?
5. Analyze the activities of your local music club from the standpoint of their educational values.
6. Does your community music program involve any kind of follow up work in connection with the public school music? Make suggestions as to what might be done along these lines.
7. Outline a completely organized program of musical activities for a typical American community of about ten thousand.

CHAPTER XIV

1. Show in what ways an increasing insight into and respect for music in the community would tend to raise the professional status of the music teacher.
2. List and discuss the various respects in which (a) the independent music teacher, (b) the public school music teacher, is in a position

that is educationally less fortunate than the public school teacher of academic subjects.

3. Analyze the disadvantageous results of the guarantee and percentage systems at schools of music. Why do teachers often cling to these systems? Could teachers' objections to modifying these systems be met and overcome by some practical and reasonable safeguards?
4. What would be the probable results of a system of license and certification for all music teachers, similar to that now in vogue for public school teachers?
5. What would be the probable effect of introducing state-wide or nation-wide musical examinations of various grades (analogous to the civil service examinations), such as are in vogue in some European countries?
6. How may public school music operate to help professional standards among music teachers in general?

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